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LAND ECONOMICS

a quarterly journal of
PLANNING, HOUSING & PUBLIC UTILITIES



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Considerations for Reclamation Policy

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Otto Schiller

**Public Utility Rate Control in a Period
of Price Inflation**

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The Rollover in Rental Housing
Jules Backman and Abraham Gitlow

**A Water Policy for the American People:
A Commentary on**

The Report of the President's Commission
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VOLUME XXVII, NUMBER 1

FEBRUARY 1951

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AMERICAN ECONOMIC REVIEW

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Volume XL

December 1950

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Reviews of Books, Titles of New Books, Periodicals, Notes

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IMPORTANT ANNOUNCEMENT

Change in Subscription Rates and New Offerings Effective January 1, 1951

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We bow to "the inevitable" rise in prices and have increased the subscription rate of this journal, but only after prolonged weighing of values, tangible and intangible. In announcing this step we share with readers and subscribers some facts which have considerable significance.

Land Economics is not self-supporting: it is subsidized by the University of Wisconsin. It carries no paid advertising. Its subscribers are universities, research organizations, business concerns, governmental agencies, and their personnel. The Editorial Board has followed a consistent policy of seeking scholarly quality in the selection of articles and gives precedence to the publication of the results of original research.

When faced with the necessity of increasing the revenue the question quite naturally arose as to whether the magazine contributes to human knowledge in the measure that the Editorial Board and the Council believe that it does. A number of readers were interrogated. Their replies—succinct, strong, and significant—were both gratifying and stimulating. We quote here and on the following page from a few of them.

It is a moving thought that an academic publication, issued quarterly in Madison, Wisconsin, is able to take ideas from California and Iowa and influence the redistribution of land values in Philadelphia or the location of banks and corporations in New York City, and that the efforts of a professor in a university in the Pacific Northwest or a scholar in Tennessee are found valuable and applicable to municipal or financial problems in Chicago or Cleveland. *Land Economics* is more than a vehicle for translating academic studies into a practical utility. It is a means of interchanging ideas among the members of a new branch of economics that is steadily gaining adherents in many universities and numerous fields of practical endeavor. I have been able to see its influence. It has been quite obvious that men in high places in real estate, appraising, banking, housing, and the public service were powerfully influenced by it as the single, authoritative, disinterested, and reliable medium of thought and information in this increasingly important field. *Frederick Gutheim*, The American Institute of Architects.

Because Wisconsin historically was a leading state in the field of regulation and because it is contemporaneously a leading contributor to the philosophy of regulation, it seems almost natural that the University of Wisconsin should sponsor such a publication located close to a pioneering source of scholarly activity. *Lincoln Smith*, Visiting Scholar, Columbia University.

Over the years *Land Economics* has been of major importance in the growth of understanding among laymen as well as professionals in this field. *James G. Patton*, President, National Farmers Union.

The field it covers permits an integration of research and planning in geography, economics, and political science which is extremely valuable. It is reminiscent of the classical subject of political economy which has been lost in the day of specialization. *Nicholas Helburn*, Montana State College.

The ideas it contains have with astonishing frequency found their way into the great public debate which now envelops the entire question of national resource development. *Robert Harrison*, Agricultural Economist, U. S. Bureau of Agricultural Economics.

Invaluable to me as a source of information about research in fields related to my own field of sociology. *Harald A. Pedersen*, Mississippi State College.

To anyone concerned with the public utility industry from the standpoint of the welfare of the community and of the Nation, its disappearance would be something of a tragedy. To be sure, other periodicals are also devoted wholly or partly to the same subject. But they are quite lacking in the scholarship, the dignity, and the impartial editorial policy of *Land Economics*. *James C. Bonbright*, Professor of Finance, Columbia University.

We rely on it for articles that simply do not receive publication anywhere else. We consider it an invaluable tool in our work to improve housing and planning in New York City. *Ira Robbins*, Citizens Housing and Planning Council of New York.

Invaluable for both teaching and research. *Joseph R. Rose*, Professor of Transportation and Public Utilities, University of Pennsylvania.

It fills a unique place among the technical and professional journals. In addition to the high-quality articles there are the excellent short comments and progress reports that help professional workers to keep informed. *Marshall Harris*, Head, Land Tenure Section, Bureau of Agricultural Economics, U. S. Department of Agriculture.

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The Farming Co-operative: A New System of Farm Management†

By OTTO SCHILLER*

THE machine age has created new problems for agriculture. Although farms, too, use more and more machinery their application is much more limited than in industry, especially on small farms. In various ways attempts have been made to solve the problem of increasing the productivity of agriculture through increased mechanization. The Soviets chose the most radical course. Realizing that the smallness of individual farms is the greatest obstruction to the profitable use of farm machinery, they indiscriminately combined the small farms into consolidated, large-scale enterprises called kolkhozi, or collective

farms. Thus they created a cultivation system based on large-scale farm operation, with opportunity for extensive mechanization of the field work. This radical solution involved, however, such decisive disadvantages as the severe restriction of freedom of enterprise, the diminution of personal interest and private initiative, and red tape.

When large areas of the Soviet Union were occupied by Germany during World War II, the rural population almost everywhere voiced the desire to abolish the system of collective farming and to reinstate the right to private property in land and to individual management and

† This article was submitted to *Land Economics* through Dr. Karl Brandt of the Food Research Institute, Stanford University, who translated it from the original German and has functioned as intermediary between the author and the editor. Dr. Brandt writes of Dr. Schiller: "The author is internationally known for his publications on Soviet agriculture based on practical experience and travel in Russia and all of eastern Europe. From 1924-28 he managed seed production in the German-Russian Agricultural Corporation (DRUAG) in the Volga district and of the German-Russian Seed Production Corporation (DRUSAG) in the North Caucasus district. From 1931 through 1936 he was agricultural attache at the German embassy in Moscow. From 1938 to 1941 he directed the agricultural operations of

the Rumanian-German Soybean Corporation in Bucharest. During the war Dr. Schiller was drafted for service in the eastern occupied territories by the German army. Since the end of the war he first served under the U. S. Office of Military Government from 1945 to 1947, and after that became Professor of Agricultural Policy at the Hohenheim College of Agriculture, the post he holds today. Dr. Schiller has devoted many years of research to the problem of greater efficiency on family farms in Europe. (The manuscript was translated from the German and therefore may lack the precision of the original. Errors are the fault of the translator, not the author.)"

* Professor of Agricultural Policy, Landwirtschaftliche Hochschule, Hohenheim, Germany.

operation of privately-owned land. The shortage of farm equipment and the unpreparedness of kolkhoz farmers for an immediate shift to individual management, however, made it practically impossible to replace the collective system promptly with independent, individually-operated family farms. Furthermore, the return to the primitively equipped small farms of pre-collectivization days was not a worth-while objective. An attempt was made, therefore, to replace the collective system by a new system of farm management, called by this author the farming co-operative.

Even before World War II, much thought had been given in various countries to the idea of applying the principles of the co-operative enterprise to the operation of farms. In some instances, practical tryouts had been carried through. Now, however, for the first time in history, a large-scale experiment along that line was undertaken. It created and set in motion almost 2,000 such farming co-operatives, embracing nearly 380,000 individual farms on 5 million acres of land. These farming co-operatives were intended as a means by which to try to find a synthesis between the incentives and initiative of private ownership and enterprise, on the one hand, and the advantages of a large-scale enterprise with a rational crop rotation and extensive mechanization on the other.

The essential point here is that the farming co-operative does not distribute its land in consolidated tracts among its members, but allocates to them strips of land from each field. The fields are laid out according to a common-crop rotation. Each farmer thus receives as many strips of private property as there are fields. A farmer may have an individual strip for, say, winter wheat in the joint field. In another field each one will grow spring

grain, or hoe crops, or fodder crops. This system permits the use of machinery on a co-operative basis, even for small units of land. The strips of the individual members of the co-operatives are cultivated either successively (for example, when the co-operative's seed drill is operating); or certain operations are carried out in a single process irrespective of the boundaries of the individual strip (for example, when the co-operative's tractor plows the field).

A period of two years was a short time for testing this new experiment in agriculture, but because of its large scale, there was time enough to gain insight into the problems of farm management on a co-operative basis and to gather experience and suggestions for the extension of such a system.

It cannot yet be said whether other countries having a similar agricultural structure could make practical use of the lessons taught by this experiment. One must not overlook the fact that the experiment was carried out under especially favorable conditions. In allocating the strips, the problem of private property rights or private boundaries did not arise, since all the land was already publicly owned. Furthermore, the people themselves were especially disciplined for collaboration in the framework of a co-operative, having lived and worked under the collective system for ten years or more. However, the practical work of these farming co-operatives yielded valuable knowledge which might serve as a guide for its application even under conditions different from those in the area of the experiment.

The author does not suggest that this particular system of co-operative farming be applied in other countries, but he is of the opinion that, particularly in countries where small family farms prevail, the idea of co-operation should be

promoted, not only in the field of marketing, but also with regard to the actual process of agricultural production. This report of the first large-scale experiment to put agricultural production co-operatives to work is meant to contribute to this idea.

The idea of the farming co-operative has in the past been the subject of discussion in several countries. In Germany, Ludwig Herrmann, in his book, *So steht es um die Landwirtschaft* (*The Present State of Agriculture*), developed this idea in a way which attracted considerable attention. Official agencies, however, objected to his ideas because they believed that the farming co-operative he recommended was either Soviet-style collectivism or a transition to it. Prior to Herrmann, Professor Adolf Muenzinger of Hohenheim had introduced a co-operative system of farm management in his experimental village, "Haeusern," although it was not a farming co-operative as such. This experiment, too, has often been erroneously interpreted and compared with collectivism.

During his studies of agrarian policies in southeastern Europe, the author had advanced the idea of the farming co-operative and in 1941 amplified it in a pamphlet on the possibilities of intensifying Rumanian agriculture.¹ This presentation was based on the old Rumanian form of farm management known as *Obste*. During the years following the publication of this pamphlet the Rumanian government established a few dozen rural production co-operatives which were substantially the same as the farming co-operatives described here. At the same time, similar efforts to devise a system of co-operative farm management were made in Bulgaria. When the author was requested in the

summer of 1941 to submit recommendations for the abolition of the kolkhoz system and for the reintroduction of private enterprise in the German-occupied areas of Soviet Russia, it was only logical that he commended the adoption of the farming co-operative. His proposal was incorporated in the Reich's so-called "new system of land tenure."

In principle, the kolkhoz system could be abolished only by replacing collective farm management by individual farming based on private enterprise. The new system of land tenure and the farming co-operatives both aimed at a transition to individual farm operation and the establishment of farming co-operatives.

After considering the difficulties of shifting immediately to individual enterprise, it seemed advisable to seek a solution in the co-operative form of farm management. The idea of replacing the collective system by a co-operative system of farm management was not the result simply of theoretical reflections. It arose by necessity from wartime conditions in the occupied territories. The extreme scarcity of farm equipment made an immediate and general establishment of separate and completely independent individual farms impossible, quite aside from the technical difficulties of dividing the land. From the outset, the land had to be distributed so that the small farms could assist each other co-operatively and utilize to the fullest extent the equipment taken over from the kolkhozi. Hence a common crop rotation was necessary.

The Common Crop Rotation. A single-farm system with consolidated fields was ruled out as a basic pattern for land allocation. Instead, a field layout was designed which divided the land shares of the individual farms among the fields of the community within the frame of a common crop rotation. This necessarily resulted in an association of the individual

¹ Otto Schiller, *Die Möglichkeiten der Intensivierung der rumänischen Landwirtschaft* (Berlin: Mitteleuropäische Wirtschaftstages; 1941).

farms on a co-operative basis, called the Farming Co-operative. The field layout with a common crop rotation required that the individual farms created by the division of the land should not receive their land in one spot in the community area, but that, in each field of the crop rotation, each farm be assigned a share which generally had the shape of a strip of land. This meant that, owing to the fixed crop rotation customary in this region of the Ukraine, the land of one farm was usually scattered among six or eight fields.

Such a field layout is frequently opposed on the ground that it artificially splits up the land of each farmer, a condition which contradicts the result for which many countries strive, in their efforts to consolidate farm land. Yet it is a mistake to compare a systematically arranged field layout with the chaotic pattern of fields and parcels found in regions where farm property is split up as a result of the division of estates, of sales, doweries, and of gifts.

Such dismembered property, composed of many scattered strips, was the framework of the family farm in Russia before the revolution, and was a serious obstacle to progress in agriculture. At that time there also existed a sort of uniformity in crop rotation in so far as there was a distinction made between fields of winter crops, summer crops, and fallow land. This uniformity did not, however, result from crop-rotation requirements as such, but from the fact that the field work on the parcels scattered over the entire community area demanded co-ordinated effort by respective neighbors in order to make each individual parcel accessible, and to provide for common grazing on fallow land and stubble fields. While the uniformity in crop rotation represented a real handicap to the introduction of progressive

crop rotations, the field layout and the common crop rotation of the farming co-operatives necessarily led to the introduction of progressive crop rotations on the individual farms.

Other objections were raised to such a field layout. Scattering land among approximately eight different places of the community area creates considerable distances which the farmer has to cover in order to get from one parcel to the other and to make his way home from his various holdings. It was assumed that this would imperil the profitability of so small an enterprise. However, the long distance between the strips and the farm house is a managerial problem inherent in the village type of settlement. The resulting long internal communications can be shortened only by fundamental resettlement and spreading out of farms on the basis of hamlets or road villages or consolidated single-farm tracts (called *chutor* in Russia) scattered over the entire area of a community.

If one does not change the layout of the villages and divides the land into consolidated blocks, i.e., in a form which Stolypin's agrarian reform defined as the *otrub*, the average distances between the fields and the village itself do not become shorter. It may be possible, however, to give more consideration (under the consolidated block system) to the distance of the individual farmstead from its fields, than under the allocation of land according to a common crop rotation. Yet distances could be shortened only insignificantly. Moreover, dividing the land into consolidated blocks, of course, leaves almost no roads between the individual fields belonging to one and the same farm, since all fields are adjacent to each other. Such division also involves the disadvantage of making impossible the distribution of the land in lots of equally good soil or equally dis-

tant from the farmstead. One farmer, for example, will receive good soil or a piece of land in the immediate neighborhood of the village, while another farmer will have to be given poor soil or a piece of land at the remotest boundary of the community area. These disadvantages could be partially equalized through proportionate reduction or increase in acreage. This, of course, would require comprehensive preliminary work as far as soil appraisals and surveys are concerned.

The consolidated site is of managerial advantage only if it can be cultivated independently. This advantage disappears, however, as soon as the farmer depends on joint use of draft animals and machinery with his neighbor. Co-operative use on winter crops, root crops or other spring crops requires that the co-operators be in the same location within the community area, so that the parcels can be cultivated successively or their cultivation organized co-operatively.

The Size of the Individual Farms. Owing to the comparative density of the agricultural population in the territories concerned, land division resulted in relatively small farms, averaging about 4 to 8 hectares (approximately 10 to 20 acres) in size. This small size called from the outset for consideration of consolidation on a co-operative basis, which was a managerial prerequisite for the efficient operation of such farms. A small-scale farm of 4 to 8 hectares, especially if extensively operated, could hardly be equipped with power and inventory sufficient for independent operation. Unless left to backward and primitive management, these small-scale rural enterprises were dependent upon mutual assistance and the use of machinery within a co-operative organization. To fulfill the first condition of conscientious cultivation of the soil—i.e., the

drawing of a good plow furrow—more traction power is required than a farm of 4 to 8 hectares would ever afford to support. Such a farm may not be able to keep more than one horse while, for example in the steppe districts, four or even five horses have to be put to the plow. Therefore the farming co-operative was considered not only as an emergency solution while equipment to the extent required was not available, but it could be assumed that it would eventually be an adequate permanent solution in the operational merger of small-scale farms.

It was a question of great importance on what basis the land should be allocated. In the agrarian history of eastern Europe the distribution of land according to the number of souls under the Mir system had played an important role. Under this system the land in the community area was redistributed every nine or twelve years among the families living on it according to the number of souls on each area at the date of redistribution. The Mir system was still fixed in the minds of the peasants of that region. Wherever, therefore, the peasants broke up their collective farms of their own accord under German occupation in World War II, they did it on the basis of the historical principle of the number of souls. In many cases this principle was adapted to the requirements of farm management by using the number of family members fit for work as the key, and not the number of souls. Thus an appropriate allocation of manpower to the respective area was accomplished, at least for the time being. But, for the long run, neither distribution according to the number of able-bodied persons nor according to the number of dwellers could suffice. There had to be taken into account the fact that the number of persons in a village community is subject to constant change. The only stable ele-

ment in this case was the number of farms. This measure, therefore, had to serve as the basis in the distribution of the land in the farming co-operatives. But it frequently was in contradiction to the customs of the peasants.

In the distribution of the land, all farmsteads entitled to receive a share were allotted an equal amount of land. For obvious reasons, no consideration could be given to pre-collectivization status of ownership. In the first place, the boundaries of the former individual farms often could no longer be accurately ascertained. Moreover, recognition of the old property claims would have been followed by endless legal argument and finally it would have led to a completely inappropriate distribution of labor and farm equipment, inasmuch as a family with a small working capacity in many cases would have received a large piece of land, while another composed of a larger number of able-bodied members would have been assigned to a small portion of land.

The Size of the Land Shares. When the area of the former collective farms was divided by the number of peasant farmsteads, surprisingly great differences as to the density of farm population resulted.

A stabilization of these conditions had to be avoided when the New System of Land Tenure was initiated. In densely settled areas, surplus farm laborers who were needed elsewhere were not to be bound to the district by land allotment. In sparsely settled regions, on the other hand, it was not feasible to eliminate or even diminish the possibility of the settlement of newcomers fit for work by distributing all the land among the small number of current inhabitants. Thus only in districts where the density of settlement was normal was the general principle of dividing the given area among its settlers unrestrictedly applied.

In densely settled districts the lower limit of the acreage to be allotted to one farmstead was fixed at 4 hectares of arable land. This limitation was necessary among other things in order to prevent the establishment of unpromising farms with too little land. For reasons mentioned above, it was also necessary to fix upper limits, usually 7 hectares, and in sparsely settled regions sometimes 8 to 15 hectares. This regulation meant that in densely settled areas some applicants who, under normal conditions, would have been entitled to an allotment, had to be excluded. In sparsely settled areas, on the other hand, a large amount of land was not allocated, but was retained as "reserve land."

The Farm Groups. The distribution of the equipment of the former collective farms caused difficulties because the existing inventories were not sufficient for the most part to equip all the individual farmsteads. If, for example, 30 horses, 20 plows, and 25 field carts were available for 100 farmsteads, an equal distribution satisfying all farmsteads was hardly possible. In a case like this, there was no other solution than to unite the farmers into groups to whom the equipment was assigned as joint property. Consequently, the peasants had to be combined into working groups prior to the distribution of the farm equipment. These groups consisted ordinarily, but not invariably, of ten farmsteads. The farm groups formed on the basis of a certain inventory represented a feasible work combination. They were, therefore, a determining factor in the division of the arable land, inasmuch as their strips had to be a contiguous piece within the community area. As a general rule, the normal sequence of the parcels of the individual farmsteads was changed in each of the different fields of the crop rotation in order to guarantee a

more just distribution of the land. Through the formation of groups, however, this change in order in any case left the land portions of members of each group coherent.

Method of Land Distribution. In order not to establish too long and too narrow strips while laying out the fields, it was necessary for the most part to subdivide the fields by fieldroads. Normally, the ratio between width and length with regard to these individual strips was not to be more than 1 to 8. With a share of 4 to 8 hectares which was, as a rule, divided among eight different fields, the size of one individual strip consequently amounted to .5 to 1 hectare (1.25 to 2.47 acres). Under the prescribed ratio between width and length, the individual strip was generally 20 to 40 meters (22 to 44 yards) wide and 200 to 300 meters (220 to 330 yards) long. These proportions were still supportable from the managerial point of view, even with regard to work to be carried out by machines on the individual strips, and not jointly.

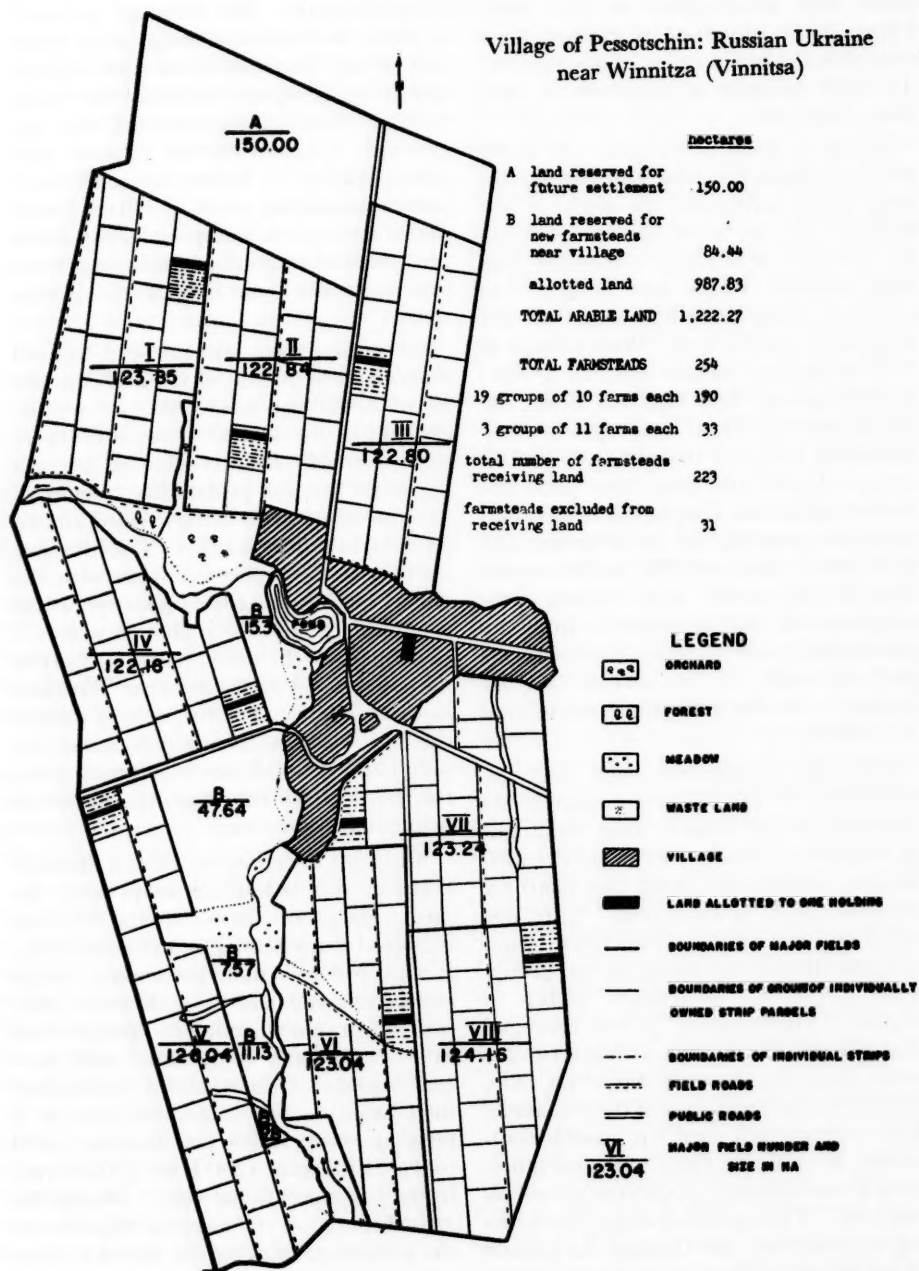
Through subdividing each field by fieldroads 200 to 300 meters—sometimes even 400 meters—apart, long, rectangular sections of fields were created called *Gewanne*, which run along the roads for the full length of each field. Care was taken that not only the individual strips, but also the lots belonging to one group, were preserved undivided within a *Gewann*. Furthermore, it was arranged that all individual strips within a *Gewann* were laid out in one direction, i.e., parallel to the short ends of the rectangle. This arrangement made it possible uniformly to cultivate fields with machines, even if two different crops were grown on one field. This was done simply by drawing an imaginary line through the middle of the whole field which parted the individual strips in two halves bearing two

different crops. The frequent tendency to have the individual strips meet roads and village boundaries on their narrow side in order equally to share the lower yield of crops at the roadside was not generally followed for the reasons indicated above. Those farmers whose parcels paralleled roads or village boundaries were given an especially profitable piece of land in another field to compensate them for their loss on the border strip.

Generally, there was no need to heed differences in quality of soil and distance from the village made obvious by the division of the land. These differences were normally counterbalanced according to the rules of probability because of the individual strips being divided among six or eight different fields. The breaking up of a former collective farm with the aim of establishing farming co-operatives produced, therefore, a picture which is illustrated by the accompanying chart of the village of Pessotschin near Winnitza in the Ukraine. For the sake of clarity, the chart shows (in dashed lines) the individual strips of one farm group only, the black bars representing the strips belonging to one farm.

So as not to create too great a distance between the individual strips and the farm house or between the various scattered strips belonging to one holding, it was ordered that particularly large collective farms had to be divided either into two or more farming co-operatives or into one farming co-operative with several separate crop rotations (subsidiary field areas). The maximum size of a farming co-operative was fixed at 1,000 to 1,500 hectares (2,471 to 3,706 acres) in the first operational year. During the second year, on the basis of experience, the maximum limit for the size of a farming co-operative was lowered to 500 to 1,000 hectares (1,235 to 2,471 acres).

Village of Pessotschin: Russian Ukraine
near Winnitza (Vinnitsa)



With a crop rotation consisting of eight fields, this meant that each field was 60 to 120 hectares (148 to 296 acres) in size.

In order to provide for subsequent allotments to returning village inhabitants or sons of farmers with no claim to succession on the farm, a certain area had been retained in each case as a reserve. As a rule, this reserve represented 10 to 15 percent of the arable land. Part of it was adjacent to the village so that additional land could be allocated to the enlargement of farmsteads, for orchards, schools, or for garden land for craftsmen.

There were two ways of cultivating the land reserve. Either it was operated jointly by assigning the work to farm groups with surplus labor or to non-members, or else it was leased to farm groups or to individual members. This afforded an opportunity to pay special attention to the unequal strength of manpower on the individual farmsteads and to initiate a certain equalization of manpower and traction power.

In villages of sparsely settled regions provision had to be made for new settlers or returning villagers entitled to a portion of land. For this purpose a number of reserve farmsteads or even whole reserve farm groups were included in the plan of land division, and the land of these "blind holdings" or "blind groups" was also divided among the various fields of crop rotation. The strips of these reserve holdings in the meantime were cultivated by the neighbors or by the farming co-operative as such.

Meadows and permanent pastures were always left as undivided common property. Common pastures are an old tradition in eastern Europe. In the farming co-operative, joint land use for grazing extended also to fallow and stubble fields. The right to harvest specific pieces of the meadows individually was assigned from year to year.

Orchards, taken over from the former collective farms, also became common property, and picking of the crop was arranged in the same manner.

The land immediately adjacent to the farmsteads which in collective farms was in individual use was likewise individually allocated and was usually expanded beyond the limit set under the kolkhoz system to one hectare (2.47 acres). It was used for the cultivation of vegetables, potatoes, etc.,—mostly for home consumption and as an additional fodder source for the livestock of the individual holdings.

Livestock Breeding in Farming Co-operatives. In the farming co-operatives the individual farmers usually did their own livestock breeding. Draft animals and cows of the kolkhozi were distributed usually among the individual members or farm groups as their property. Sires, however, were retained for co-operative use similar to the co-operative bull or ram stations known in other countries. Highly qualified purebred herds and flocks which were needed for the development and reconstruction of livestock breeding, and which were to be fully utilized, also were not distributed. This applied particularly to flocks of caracul sheep and herds of Simmenthal cattle.

There was argument at first as to whether large flocks of sheep should be broken up, since sheep breeding seems more suited to large-scale operation than does the breeding of other animals. But it was possible to achieve a systematic development of sheep breeding in farming co-operatives based on private enterprise with common pastures and joint shearings, co-operative stud service, and selection for breeding under public supervision, and yet the interest of the individual farmers in sheep husbandry was sustained by dividing the flocks among them especially during the winter.

In many cases, however, the flocks were not divided, and became the joint property of the farming co-operative.

Some of the farming co-operatives also kept brood sows to furnish its members with feeder pigs. In others, some members bred sows and supplied the other farmers with piglets. The breeders obtained a slaughter permit for one fat hog for every seventh piglet delivered.

Apiculture was adapted to local conditions. Bee hives were distributed among farmers who took a special interest in bee keeping. In general, however, the hives were taken over by the farming co-operative and an experienced member charged with their care.

The Operating Rules of the Farming Co-operative. The rules of operating the farming co-operative provided for joint execution of work adaptable to the use of machinery, and for the individual performance of all work in which the use of machinery was less practicable and the personal interest of the farmers particularly required. Above all, it was fundamental that the harvesting procedure assure every member of the farming co-operative the yield of his individually owned land. This proved to be the only way to arouse and sustain the farmer's personal interest in his land. It also provided powerful incentive to increase the yield by additional individual effort, such as the application of fertilizer and manure or thorough hand hoeing, and to the gradual improvement of soil fertility. In general, the rules of operating the farming co-operative may be defined by the simple formula: joint cultivation plus individual harvesting. However, this general formula must not become an inflexible scheme slavishly followed.

Cultivation. Pursuant to the original provisions, the cultivation of the fields started out as a joint operation. When sufficient farming equipment was avail-

able and all other prerequisites fulfilled, provision was made for individual cultivation. Particularly in the beginning members of the farming co-operatives frequently did not understand the advantages of joint cultivation. It was understandable that after years of inner resistance to compulsory gang work on the kolkhozi these farmers should now swing to the other extreme, assuming more independence and more freedom of action than they could afford, or more than served the end of maximum production. If one had given way to the widespread wishes of the over-enthusiastic elements of the rural population, the employment of machinery would almost have ceased, and a primitive kind of farm management would have developed that certainly would have lowered the level of yields. It took time to make the farmers understand that the principle of the farming co-operative was different from collectivism, and that joint work on a co-operative basis would serve their own interests without depriving them of their independence.

In spite of the regulations, however, cultivation work, often performed individually even in the first year of operation, had some advantages, because it gave those members of the farming co-operatives who had had no chance to harvest their own parcels their first opportunity actually to take possession of the property assigned to them. By experience it was learned that the farmers did not consider the land to be their personal property until they once had cultivated and harvested it themselves.

Individual plowing did not need to be a managerial disadvantage. The more frequent turning of the plow at the end of furrows did not make much difference, inasmuch as everywhere large fields are usually plowed up in several sub-sections

or "beds." There was a disadvantage, however, in cases where considerable differences existed among the individual pieces of a field as to quality and time of plowing; these created complications and made difficult the uniform and well-timed subsequent cultivation of an entire field. On lots which had been seeded too late in the fall, the crop was lost through winter kill. Hence these lots had to be plowed up again in the spring and sown to spring crops. This upset the common crop rotation. Uniformity of cultivation could be maintained, therefore, only if all individual strips were cultivated uniformly, at least to a considerable extent.

Large, uniform fields are more impressive, but this was of little concern in deciding for joint cultivation. Yield per hectare, not uniformity, was what counted. Fields not uniformly cultivated but giving a better yield were obviously more valuable than uniformly cultivated fields yielding less. Individual members of some of the farming co-operatives had, for instance, started to spread manure on their strips from their cattle barns that formerly was used only on land immediately adjacent to the farmsteads, thus creating differences in the stand of grain in the fields. This kind of deviation from the generally low level could of course only be welcomed, even if differences in time of maturity complicated the harvesting processes described below.

Adherence to the Crop Rotation. Adherence to a common crop rotation was ordinarily an indispensable prerequisite for a progressive kind of management in farming co-operatives. In principle, uniformity of crops had to be achieved, too, and it usually could be achieved only by joint cultivation. This did not mean that for single processes of cultivation work the boundaries of the individual strips could not be observed. For ex-

ample, while drilling lengthwise on the strips, the respective farmer could drill his own strips and use his own draft animals. In cases where a drill was not available and the seed had to be broadcast by hand, each farmer usually seeded his own strip. Potatoes were planted by jointly plowing furrows across the strips and individually planting each strip. Thus, in correctly managed farming co-operatives, individual and co-operative work processes were properly co-ordinated; something that is the very essence of the farming co-operative. If a certain farmer fell behind with his individual work on his strip and thus delayed the ensuing co-operative work, the manager of the co-operative was entitled to order this work done by others at the expense of the straggler. These expenses were usually paid for in products or in work.

Where tractors were available, joint cultivation was usually simplified. Plowing and sowing across the entire field resulted. When two or more different crops had to be planted on one field, as was usual in the case of root crops, cultivating was likewise done parallel to the short side of the individual strips across the entire field, so that all farmers had an equal share in the different crops. On fields shaped irregularly it was not possible in every instance, of course, for each farmer to have an equal share in the various crops. In cases like this equalization had to be achieved by an exchange of products, insofar as crops of substantial importance for consumption were concerned.

Machine Cultivation. The full utilization of the available machinery was essential to the proper functioning of the farming co-operative. The only machine which the farming co-operatives could not use fully was the large combine, because its use was not profitable in the individual harvesting of small

strips. During the time of this experiment, these machines could be put to good use on state farms (sovkhozi) and on large collectives not yet broken up. In farming co-operatives they could only be utilized as stationary threshing machines.

Work done on a joint basis was in most cases at first performed by farm groups of ten farmers each. The field work was not performed on the entire field at one time—that is, across an area of 100 to 150 hectares—but within the limits of one *Gewann*—30 to 40 hectares—comprising the farm groups accessible from one field road and lying within the same field. Although such an area was large enough for the profitable employment even of large units of farm machinery, cultivation of fields in *Gewann*-units had the same disadvantage that individual cultivation of strips did—that of impairing the uniformity of cultivation and growth unless work was started on all strips of the individual groups at about the same time. To overcome this disadvantage was therefore mainly a question of directing the work efficiently. In due course the working groups became less and less significant.

In many cases teams, instead of working groups, were formed, centering around a certain stock of farming inventory. The basis of a team was usually the plow. If, for instance, 4 horses were required for plowing, and each farmer owned 1 horse, four farmers formed a plow team. As a rule, draft-animal teams were composed of 2 to 5 farmers. For the sake of well organized and smoothly operating collaboration, the farmers of such a team frequently exchanged some of their strips within the working groups with other farmers, so the individual strips of the team in all fields were in consecutive order, i.e., immediately adjacent to each other. In-

stead of having, for example, strips 1, 4, 7, and 9, after the exchange they would have strips 1, 2, 3, 4 within their working groups. This temporary exchange was easily managed since the individual strips of every farm group were in all fields laid out parallel to each other and always within one *Gewann*.

Harvest Work. During the first year of operation, individual harvesting presented some difficulties. The new field layout and the new plan of crop rotation could not be introduced precipitously. If, for instance, the land was divided at a time when winter crops were already growing, the old arrangement had to be kept, and even on the remaining area the new layout could not be completely effected. In many cases the preceding crop did not allow faithful compliance with the new field layout in the first year because, for instance, it did not seem advisable to plow up a clover field. In most cases, however, it took the individual farms no more than a year of transition to fit their field strips into the common crop rotation. During that year of transition, however, cultivation was not performed within the new field boundaries, and for this reason the planted crops were not equally distributed over the strips of the individual farms. Thus it was impossible to have the farmers do the harvesting on the strips assigned to them for permanent utilization. The crops therefore were divided as they had been planted, and were assigned in lots to the farmers for individual cultivation and harvest. This division of crops was in effect for only one year.

In the first year of joint cultivation the individual farmer had very little if any influence on the grain yield of the strips assigned to him. In eastern Europe grain had been grown up to this time mostly without hoeing. The effect of

better cultivation of the preceding crop upon the yield of ones following could not be seen in the first year. For these reasons, the farmers generally preferred during the first year to harvest entire fields jointly or to harvest *Gewanne* when there were differences in the stand of grain, in order to obtain a more just distribution of the yield. During the second year of operation, when the farmers had actually taken over their land as personal property, all the farming co-operatives turned to individual harvesting on all strips.

Full Utilization of Harvesting Machines.

In the beginning, individual harvesting was frequently objected to because it appeared that too little equipment was available. Experience demonstrated, however, that individual harvesting did not prevent the good utilization of the equipment at hand. Even if more frequent turning of the machine in individual harvesting did lower the machine's output, it was usually fully compensated by work of a better quality. More frequent turning of the machine was not necessary, moreover, in all cases. Often the boundaries of the strips of a working group were first mowed with scythes so that the binder or mower could run across the individual strips without turning, thus in one operation covering the entire farm group or a *Gewanne* or even a whole field planted to one crop. Frequently the farmers even refrained from marking the individual strips by cutting down the boundaries beforehand and were satisfied to bundle the sheaves within the boundaries of their respective strips after the harvesting machine had cut the grain in one operation. Frequently the grain in farming co-operatives was mowed with scythes and sickles. Particularly in densely settled areas where individual holdings comprised not more than 4 hectares, mowing by hand, which

was generally accomplished within a few days, caused hardly any delay.

Utilization of Threshing Machines.

Threshing involved far greater complications. The farming co-operative naturally could not be denied the use of threshing machines. On the other hand, unnecessary loss of time and energy caused by individual threshing had to be prevented. But individual threshing was an indispensable element in realizing the goal of private enterprise in farming co-operatives. There was some apprehension, however, that individual threshing would jeopardize the public collection of grain because now, in contrast to kolkhoz practice, the farmers had possession of the grain prior to delivery. It was therefore ordered that individual threshing had to take place at common threshing and stacking points. The grain yield of each individual strip was separately driven to the threshing yards and there threshed separately. This meant some additional work, inasmuch as the last cart brought in by each farmer sometimes was not fully loaded. Experience proved that it was not necessary to thoroughly and ceremoniously clean out the threshing machine after threshing each lot. It was sufficient to use separate sacks for each lot. This procedure was frequently followed by flour mills when small individual lots had to be milled. The small residue which the machine still held when the sacks were removed each time was shared in equally by the respective parties taking their turns and, when the threshing was completed, the last residue was given to the first in line. In a comparison of joint and individual threshing, it had to be admitted that the latter involved a certain loss of time. However, it was fully compensated by increased industry and interest by the farmers, as was obvious in the case of other individually-performed work.

In case the grain had to be stacked prior to being threshed, the farm groups usually stacked their separate piles of grain at one place, side by side. To keep the harvest of individual farmsteads separate in joint stacks proved to be feasible. At first, the individual lots also were sometimes stacked on top of each other with layers of straw or tree branches separating the layers. The bottom shares gained by the accumulation of shattered grain. Stacking the lots side by side made separation easy. All lots together were covered with straw. When the farming co-operative had no threshing machine, the grain was threshed with stones or flails.

In some cases a simplified procedure was followed at common threshing yards. In order to secure equal shares for delivery and for contribution to the operational stock of the farming co-operative, the manager determined how many heaps (60 sheaves each) each farmer had to deliver to the threshing machine or to a common stacking place according to the quality of the grain and the weight of the single sheave. The threshing of this part of the harvest then proceeded jointly by the respective groups. The rest of the grain in the straw was equally divided among the members of the individual groups and carted from the fields to the individual farmsteads and there eventually threshed by the farmers themselves at the most convenient time. This procedure saved fuel for the threshing machine and balanced the labor load, since the grain for home consumption could be threshed any time during the winter. Naturally, a procedure like this called for an efficient manager of the farming co-operative and one endowed with sufficient authority and experience in appraising heaps of grain.

In some districts experiments were made to avoid stacking and common

threshing by hauling the entire grain harvest to the individual farmsteads. Here, too, threshing was performed almost everywhere without any trouble. In using the threshing machine, the rule was made not to thresh the different kinds of grain in immediate succession at the farmsteads. This would have caused loss of time owing to the frequent moving of the machine, and would have led to the mixture of different kinds of grain. The most appropriate procedure was for the members of a farm group to cart their grain to a common place and thresh it separately. The point chosen was either a suitable farmstead of one of the members or a special threshing yard in the vicinity of the respective farmsteads. For threshing in the village the use of the combine as a stationary machine proved suitable because it could more easily be moved from one station to another, and more easily cleaned, than the clumsy and extremely heavy ordinary threshing machine. In these experimental districts the collection of grain from individual farmsteads involved no essential difficulty. The intention was, therefore, to renounce the obligatory common threshing yards and stacking points. There was no doubt that under half-way normal circumstances the farmers, acting individually, would fulfill their delivery duties. Where delivery was effected by the farming co-operative from common threshing places, it was important that the farmers be paid by the cooperative.

For crops like soybeans and buckwheat, grown only on a small acreage, and of which the individual farmers had but little, individual machine threshing was too complicated. Hence the threshing frequently was done by hand.

Harvesting of Root Crops. Individual harvesting of root crops was particularly important because each farmer could do

much to boost the yield—for instance, by more and better hoeing. For harvesting potatoes, the machines were used in the same manner as described for the planting procedure—namely, jointly and crosswise, while the farmers themselves picked up the potatoes on their respective strips.

In storing potatoes, beets, and other roots in common earth pits, the respective yield of the individual farms was frequently not ascertained by weight, but by crate. Pitting was done either jointly for all members, or jointly for the members of one group. When sugar beets were delivered, the individual farmer's share in the crop was easy to ascertain, since the individual wagon loads were usually weighed separately at the factories. Payment for the sugar beets was received by the farming co-operatives and paid out to their members. In addition to the money for the beets which had to be fully delivered, the freedom to use leaves and tops as fodder, and the bonus of sugar, molasses, and beet pulp paid per quintal of beets delivered, provided a powerful incentive for individual cultivation of sugar beets.

Conclusion

Experience proved that well managed farming co-operatives very soon developed an appropriate method of operation which, on the one hand, left sufficient leeway for private initiative within the frame of individual enterprise, and on the other hand, met the requirements of progressive farm management. Various difficulties were encountered which, particularly in the initial phase of a new form of management, were unavoidable. Thus in some instances it was noted that the farmers' industry decreased because

of inefficient organization of individual work in the farming co-operatives.

Where the display of man's natural egoism could not be curbed effectively, mutual assistance and co-operation could not function properly. In some cases, the use of jointly-owned farm equipment was the source of quarrels among the farmers. In general, however, they became familiar with this new type of management in a surprisingly short time, and with their own resourcefulness and practical minds contributed substantially to the further development of co-operative operational methods. Therefore the expectation proved to be correct that one would not proceed according to an inflexible scheme, but would leave to the judgment of the individual members of a farming co-operative themselves the best method of farm management in accordance with local conditions.

Although the period during which the farming co-operative could be tested in practice was limited to two years, this period was long enough to prove that, given certain prerequisites, this new method of management could yield excellent results. During these two years this new form of management proved to be ideally suited in lifting small-scale farms to a higher level of performance. The prerequisites were: (1) topographical conditions suitable to the establishment of a common crop rotation; (2) predominance of crop farming; (3) regional predominance of small-scale farming—i.e., with no more than 10 hectares of arable land per farm; (4) availability of large-scale farm machinery; and (5) availability of an efficient and energetic manager for each farming co-operative.

"A Critical Appraisal of Otto Schiller's Farming Co-operative" is the title of an article by Dr. Karl Brandt which will appear in the next (May 1951) issue of this *Journal*.

Public Utility Rate Control In a Period of Price Inflation[†]

By JAMES C. BONBRIGHT*

YOU will not be surprised to learn that the period of inflation with which this paper is concerned is the period in which we are now living. Needless to say, the future course of this inflation will be unknown until it has ceased to be the future. I am ready to assume, however, that we have not yet reached the top of the hill; that we are not quite sure whether there will be any well defined top; and that an ultimate return to the price levels prevailing before the last war cannot be predicted with confidence.

Under these assumptions, what problems of rate control are raised by the inflation that now confronts us? At least four such problems may be distinguished. First, there is the procedural problem of the regulatory lag—the difficulty of making the somewhat cumbersome machinery of rate fixing keep pace with the rapid increases in wages, in taxes, and in other costs. Secondly, there is the problem of an adequate annual allowance for depreciation at a time when replacement costs of plant and equipment greatly exceed original costs. Thirdly, there is the claim of public utility companies for a higher money return on capital investment, designed to offset the waned and waning purchasing power of the dollar. Fourthly, there is the need of revisions in individual rate schedules for the purpose of bringing them into line with the current prices of substitute products or services.

All four of these problems are inter-related, and no one of them can be solved completely except in conjunction with the solution of the other three. But this paper cannot seek complete solutions; and I propose to center attention on the third problem, which is concerned with the bearing of price inflation on the standard of a fair rate of return.

In some respects, an even more critical issue is that of the allowance for depreciation. But I shall not discuss it here, partly because it is now under inquiry by a Study Group on Business Income organized by the American Institute of Accountants. Let me say simply that, while the rate base and the depreciation base of utility properties are closely related, they are not necessarily identical twins. Indeed, Mr. George O. May, in a memorandum written as Research Consultant of this Study Group,¹ has proposed that utility companies be required to base their depreciation allowances on book costs enhanced by an index-number corrective, while at the same time denying that utility stockholders are entitled, as a matter of equity, to any protection against price inflation denied to the holders of government bonds.

As one might well expect, the affirmative side of the argument for an allowed "fair return" high enough to compensate utility investors for price inflation has been presented by public utility officials and by expert company witnesses in recent rate cases. But it has also received considerable support from disinterested sources. As early as 1945, the late Judge

[†] A paper read at the public utility session of the annual meeting of the American Economic Association, Chicago, December 29, 1950.

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¹ *Business Income and Price Levels—An Accounting Study*, July 1, 1949.

John E. Benton, speaking as Counsel for the National Association of Railroad and Utility Commissioners declared that, in a severe inflation, an offsetting increase either in the rate base or else in the rate of return "would be required not only in justice to investors but in obedience to economic law. Investors [he added] simply will not buy utility securities, if they find that progressive inflation operates to destroy progressively their right to receive just and reasonable compensation for the service their properties render."² A similar point of view has been expressed by Mr. H. M. Miller, Chairman of the Ohio Public Utilities Commission, in defense of the policy of his own state in adhering to a "fair value" doctrine which gives at least material weight to estimates of reproduction cost.³

Three years ago, in a paper on the *Hope Natural Gas Case*, I myself expressed doubt as to the validity of the position taken by Judge Benton and by Commissioner Miller.⁴ That doubt remains with me today. But the further impairment in the purchasing power of the dollar and the continued increase in utility construction costs make the issue more acute than it was at the end of 1947; and a re-examination of the problem is therefore in order.

Three Possible Grounds for a "Fair Return" Designed to Offset Price Inflation

For the purpose of this re-examination, we must note that the case in favor of a flexible rate of profits designed to offset major changes in price levels may be based not alone on one ground but on several. Here I shall distinguish three

such grounds and shall discuss each of them separately. The first is the one familiar to economists under the heading of "optimum resource allocation." The second is that of practical corporation finance, namely, the alleged necessity of offering inflation hedges or safeguards to public utility investors in order to attract their capital. The third is that of fairness or equity toward investors whose capital and income, in terms of real purchasing power, will be seriously impaired unless they are allowed to enjoy offsetting increases in dollar yields.

First Consideration: Optimum Allocation of Resources. The optimum-allocation argument in favor of rate levels differing from those imposed by a historical-cost standard enjoys no great vogue among practical rate regulators; and only occasionally has it been stressed in recent rate cases by expert company witnesses. Nevertheless, I give it first place in this paper not only because of its special interest to academic economists but also because it underlies the whole economic philosophy of the "fair value" doctrine of rate control. Despite the precedent of the *Hope Natural Gas Case*, this doctrine survives in a number of state jurisdictions, and it is said to be receiving renewed support from public service commissions as a result of the drastic recent increases in construction costs.

In the 1920's, Professor Harry Gunnison Brown relied on the optimum-allocation principle as the basis for his valiant defense of the increasingly unpopular reproduction-cost standard of rate making.⁵ The more recent literature on utility and railway rate theory seems to reveal a loss of interest in this standard; and in its place there has arisen a lively controversy over the much more exciting proposal to set rates at marginal

² Quoted by Mr. W. J. Herrman, Vice-President of the Southern California Gas Company, in testimony on rate of return in the pending Southern Counties Gas Company rate case before the California Commission.

³ *Ibid.*

⁴ "Utility Rate Control Reconsidered in the Light of the *Hope Natural Gas Case*," Proceedings: *American Economic Review*, May 1948, pp. 465-482.

⁵ See, for example, *Journal of Political Economy*, 1925, p. 505; and *ibid.*, 1926, p. 479.

cost even if this practice should require a resort to outright subsidies. But in the past year or so, Professor Brown's position has received a much qualified endorsement from Professor Emery Troxel of Wayne University.⁶ If I understand Professor Troxel's position, however, he would not accept a replacement-cost or "fair value" rate base as a measure of the profits payable to utility stockholders.

There is no need to expound to an audience of economists the optimum-allocation objective of price fixing nor to explain why Brown and others have insisted that this objective can be approximated only by means of a replacement-cost standard. Suffice it to say that, according to the Brownian thesis as applied under present conditions, utility rates are too low if they yield no more than a conventional "reasonable rate of return" on the historical costs of properties constructed at prewar prices. The reason why they are too low is that, being out of line with the surrounding universe of competitive prices, they are bound to stimulate an excessive demand for utility service. As a result, one of two things must happen, and either of them would be bad. The first possibility: that the subnormal rates will fail to yield profits sufficient to attract new capital, with the result that public utility companies must ration their old customers and decline to take on new ones. The other possibility is that the wastefully high demand will indeed be satisfied, but only by means of an extravagant expansion of plant capacity.

Lack of space prevents me from attempting here a systematic critique of this familiar argument on behalf of replacement-cost rate making. I must therefore rest content merely to mention some of the reasons why, in my opinion,

the argument is unsound. In the first place, it assumes that the prices of non-utility goods and services are also brought into line with reproduction costs by the forces of competition—an assumption of doubtful validity in our economy of imperfect competition and of rapid price changes. In the second place, what the theory calls for is a level of utility rates equal to the costs of replacing the service by means of the best modern substitute plant and equipment. Yet what one gets *in practice* under a so-called replacement-cost standard is an index-number appraisal of the existing plant or else some hodge-podge "fair value" rate base—a mere caricature of the replacement-cost principle as envisaged by the textbooks. I doubt whether any one familiar with American public utility regulation believes that a genuine replacement-cost-of-service measure of reasonable rates can ever be put into general practice by public service commissions operating in an economy as dynamic as that existing today.

In the third place, replacement-cost rate making, even in its ideal form, purports to equate total revenues with total costs whereas under the optimum-allocation principles of modern welfare economics, utility rates and other prices should be set at marginal costs. And in the fourth place, an optimum-allocation theory cannot afford to ignore the factor of differential taxation. There is at least an open question whether the total tax burden imposed directly on power companies and indirectly on power users is not discriminatory as compared to the tax burden on the consumers of other goods and services. Then there are the special excise taxes on the use of specific utility services. Thus local telephone service is subject to a fifteen percent federal tax, whereas toll calls are subject to a twenty-five percent tax.

⁶ See his two articles in *Journal of Business*, 1949, p. 1 and *ibid.*, 1950, p. 1.

All of the above-noted shortcomings of a replacement-cost standard of rate control would apply even in a normal peacetime economy. Today, however, they are enhanced by the fact that we are living in a period of national emergency. The electrical utilities, for example, so far from being impelled by a false, sunk-cost philosophy of rate control to expand their plant capacity beyond proper limits, are under urgent pressure to step up their construction programs in order to meet the requirements of mobilization. To this end, the companies will receive accelerated depreciation allowances in the determination of their taxable income.

It may well be that, in order to curtail the wasteful use of utility services needed for national defense, government agencies will deem it wise to sanction increases in follow-on rates designed to make rate structures anti-promotional. But it would be a mere coincidence if rate schedules tailored for this special and temporary purpose were to yield revenues equal to overall replacement costs.

In taking this adverse position toward a revival of the replacement-cost principle, I by no means wish to deny the force of the contention, urged by Brown with many cogent illustrations from railway tariff structures, that the attempt to base rates on original cost will often run into difficulties and must sometimes be abandoned entirely. The difficulties are most serious with respect to those utility companies that supply a major part of their services in direct competition with other utilities or with non-utility enterprises. But, with rare exceptions, these are the very situations in which the alternative standard of replacement cost offers no way out of the difficulty. Let me illustrate this point with three examples.

The first is that of the Market Street Railway Case, decided shortly after the

Hope Case,⁷ in which the Supreme Court upheld the California Commission in basing rates on a valuation far below original cost. Here, the decadence of the street railway enterprise had rendered the original-cost principle inapplicable. But it had also rendered inapplicable a valuation based on reproduction cost.

A second example is that of the steam railroads during the past two decades. Competition from other forms of transport, superimposed upon competition among the railroads themselves, has undermined the whole philosophy of a reasonable rate of return to each individual carrier. Some writers have even proposed the abandonment of any control of rate levels by the Interstate Commerce Commission. But I am unaware of any expert who still contends that the solution of the railway rate problem lies in a resort to a reproduction-cost basis of rate control.

Finally, let us recall Justice Jackson's separate opinions in the Hope Natural Gas Case⁸ and in the Colorado Interstate Gas Case,⁹ objecting on grounds, not of law but of economics, to the inclusion of the cost of the producing properties of a natural-gas pipeline company as a component of the company's rate base. Instead, he proposed a "fair field price" allowance for the gas delivered to the pipeline. Whether or not Justice Jackson's position on this matter was well taken is a question beyond the scope of my paper. But I mention it here as another example of the failure of a replacement-cost rate base to overcome the objections attributed to an original-cost rate base. Justice Jackson recognized this point when he proposed the partial avoidance of any rate base whatever.

⁷ *Market Street Railway Co. v. Railroad Commission of California*, U. S. 324 (1945) 548.

⁸ 320 U. S. 591 (1944).

⁹ *Colorado Interstate Gas Co. v. Federal Power Commission*, 324 U. S. 581 (1945).

Let me close this discussion of the resource-allocation principle of rate making by stating what I believe to be the fatal weakness of the whole replacement-cost theory as expounded by Professor Brown and others. The weakness lies in a vain attempt to find some single standard of reasonable utility rates that will serve the dual purpose of controlling demand in accord with the dictates of the welfare economists *and also* of yielding profits adequate, but no more than adequate, to attract capital. These two objectives invoke such different standards of reasonableness that the attainment of the one must necessarily preclude the complete attainment of the other. They can be reconciled, if at all, only by a combined program of regulation and of selective taxation which draws a sharp distinction between the rates that consumers must pay for utility service and the compensation that private companies should receive for supplying the service. Such a distinction, for example, may well be called for in the natural gas industry. Here the interests of conservation of a scarce natural resource, together with the need for a sound relationship between the price of gas and the prices of substitute fuels, may possibly warrant the imposition of rates of charge that would yield exorbitant profits to the natural gas industry unless the excess revenues were to be withheld or recaptured by special forms of taxation. On the other hand, with the electrical utilities in more normal times, the decreasing-cost character of the industry may justify a level of rates so low that it can be made to yield an adequate return only by a grant of at least partial tax exemption.

Second Consideration: Attraction of Capital.

Let me now turn to the argument that public utility companies will be unable to raise adequate amounts of new capital

unless they can offer to investors protection against further impairment in the purchasing power of the dollar. This is an important contention, and I am not now prepared to assert that it is without merit. Unfortunately, however, there has been a tendency in utility circles to assume that its truth is self-evident instead of recognizing that adequate proof must rest on a careful analysis of the behavior of the securities market. My present comments are offered in the hope that they may encourage utility spokesmen and others to make such an analysis.

As to the future market reaction to fears of further inflation, no one can speak with confidence. If the pending efforts of the government to halt the inflation should prove as ineffective as many economists fear, there may take place a flight from the dollar and a rush by investors to buy industrial stocks, interests in oil royalties, diamond necklaces, old French Brandy, and anything else deemed to offer at least a sporting chance of an inflation hedge. Down to date, however, while the recent boom in industrial stocks is disquieting, no such general flight is under way. Even today, after more than a decade of rising costs of living, the most readily marketed securities are those with a fixed contractual rate of money yield. Utility companies still rely for the major share of their external financing on the readiness of the market to absorb huge quantities of bonds, debentures, and preferred stocks.

Of course, the current market for common stocks is not the same as the market for senior securities; and it is arguable that, while financial institutions will continue to buy bonds in large quantities, private investors will refuse to buy common stocks that do not offer the prospect of higher dividends as an offset to higher

costs of living. The high dividend yields and earning-price ratios at which utility equities have been selling recently at least suggest that investors have become inflation conscious. But the significance of these high yields is not clear, since it can be attributed in large part to doubt as to the ability of the utility industry to maintain its current rate of earnings in the face of higher operating expenses and taxes. In other words, I see no convincing evidence that utility stocks carrying reasonable assurance of stable money dividends and yielding better than twice the current interest rates on high-grade bonds will fail to find investment favor.

For many years the world's most popular corporate stock issue has been A T & T common, now held by almost one million shareholders. No intelligent investor would buy this stock anticipating an increase in the rate of dividends commensurate with any increase in the costs of living. The current rate of \$9 per annum was first established in 1922 and was maintained right through the depression of the 1930's despite suggestions from some sources that the drop in the index of cost of living would warrant a corresponding cut in money dividends. I mention this fact neither in criticism nor in support of the A T & T dividend policy but merely to indicate the importance attached by some very able corporate managements to the maintenance of dividends stable in terms, not of purchasing power but of dollars.

In considering the need of public utility companies for capital-attracting rates of profit, one must bear in mind that, even under a prudent-investment standard of rate making, any influence of anticipated future inflation on the stock market is supposed to be taken into account in the determination of a fair rate of return. For example, if a fear of inflation leads to a drop in the current

market prices of utility equities, so that these equities will now sell to yield 7% whereas they would otherwise sell to yield only 5½%, this higher yield will justify a commission in allowing a higher overall rate of return on invested capital.

For the reasons just suggested, I conclude that the alleged necessity of safeguarding utility stockholders against price inflation as a means of attracting new equity capital has not yet been supported by convincing evidence. But this conclusion need not preclude experiments with new arrangements between utility companies and regulating commissions permitting the issuance of common stock entitled to dividend rates that rise and fall with changing price levels. Initiated at first on a modest scale, such experiments would be well worth trying in order to test the question how much investors are willing to pay for securities with stabilized purchasing power, not only in times of inflation but also when price levels are on the decline. Programs of this kind, however, may have to be postponed as long as utility companies are subject to an excess-profits tax of the type now pending before the Congress.

Third Consideration: Fairness to Investors. I have reserved for final comment the third argument for increases in utility rates designed to yield money profits that will offset the fall in the purchasing power of the dollar. On the one hand, price inflation, in its very nature, is grievously unfair and disorderly in its impacts on different classes of people. But on the other hand, any attempt to save one particular class against its inequities runs the risk of imposing even more cruel burdens on unprotected classes. It also runs the risk of adding fuel to the inflationary fire.

Both of these criticisms can fairly be made against the escalator clauses in the recent union-wage contracts. They can be made with even greater force against escalator provisions in public utility rate control. Of necessity these provisions can redound to the benefit of only one class of investors—the holders of common stock. Of necessity, moreover, the burden of protecting these stockholders would fall on consumers in general, including those consumers who have been unable to provide themselves with escalators. The problem, then, is that of choosing whichever form of unfairness is the least unfair.

Several weeks ago, Professor Sumner Slichter proposed that the U. S. Treasury be authorized to issue savings bonds payable at maturity, not in terms of a fixed number of dollars, but rather in terms of a specified amount of purchasing power. His proposal received cold reception from the financial press; and it was condemned by Mr. Russell Leffingwell, Vice-Chairman of J. P. Morgan and Company, on the ground that it might accelerate the inflationary spiral. The analogy between Professor Slichter's proposal and the plea for inflation-protection to the holders of utility equities is not a very close one; and I do not mean to imply that the two must stand or fall together. But the analogy is close enough to raise some uncomfortable questions as to the fairness of the stockholder claims.

Conclusion

In this paper I have attempted to explain briefly why I remain unconvinced by the late Judge Benton's declaration that, in a severe inflation such as that now prevailing, an offsetting increase either in the rate base or else in the rate of return on utility investment is required not only "in justice to investors" but also

"in obedience to economic law." Distinguishing three possible arguments in support of such an offset, I have given reasons for my belief that the "resource allocation" argument is specious and for my feeling that the plea of "justice to investors" is dubious. On this latter point I am especially impressed by the fact that our country refuses to indemnify the holders of United States Savings Bonds against the impairment of their "real capital" and that it has so far rejected all proposals to provide any such indemnity even for the purchasers of new bond issues. The persons who buy these bonds, whether entirely for motives of investment or partly for motives of patriotism, must take their chances of a further deterioration in the value of the dollar.

There remains the "practical" consideration of financial necessity—the question whether utility companies, which will be called upon to do heavy financing during the next several years, can secure adequate supplies of common-stock capital unless they can give investors at least a reasonable prospect of money dividends that will keep pace with further increases in the costs of living. This is not an easy question to answer at the present time. But aside from the very serious difficulties in which commissions would find themselves if they should attempt to maintain purchasing power parity in their allowed rates of return—difficulties greatly enhanced by the federal excess-profits tax—we have no convincing evidence that inflation-hedge characteristics are required in order to make attractive the purchase of utility equities.

In making this last statement, I do not deny that fears of further inflation may have a bearish effect on the market for utility stocks. This adverse effect, if

it exists, must be recognized by commissions through the allowance of a higher rate of return than would otherwise be necessary. But such an allowance does

not constitute an inflation hedge. On the contrary, it constitutes compensation to utility stockholders for the *absence* of any inflation hedge.

Possibilities for Utilizing Airphoto Interpretation in the Cornell Economic Land Classification System

By ROBERT BASSETT COSTELLO*

THE land classification system developed at Cornell University is based on the premise that there are geographically localized differences in farm incomes that persist for extended periods of time. These differences in financial success are related in most instances in New York State to physical differences in the land—differences in soil, climate, topography, and location. The classification process involves collecting information on land, farms, and farming and using this as a basis for predicting relative farm incomes. Farms are classified individually first, and the results of this step are recorded on maps. Land class lines then are drawn to separate groups of farms that differ significantly in their income-expectancies.¹

This article discusses the possibilities of airphoto interpretation as a means of supplementing or replacing certain steps in the classification procedure. To date, airphotos have been used only as general base maps in the classification procedure. They aid materially in locating property lines and provide a convenient medium on which to record vegetative cover information in the field. Airphotos have not been used as an independent source of information in themselves.

Actually, of course, airphotos record a wealth of information about land and

farms. Foresters and engineers have lead the way in determining just how much is recorded in these pictures. Part of the record is obvious. Highways, streams, villages, farm buildings, fields, forested areas, and many other items can be identified by nearly any one. Soils, topography, crops, sizes and kinds of forest trees, and amounts and types of farming are other items that can be determined directly or inferred from the photographic record. The art of exploiting airphotos for the information and inferences they can supply has come to be known as "airphoto interpretation."

General Principles

An airphoto interpreter learns the meaning of photographic symbols, then translates these symbols into directly usable information. The symbols are patterns, usually in black, white and many shades of grey, on a flat surface. While the patterns are on flat surfaces, the interpreter has learned how to give them a three-dimensional appearance through the use of a stereoscope. To use a stereoscope, the photographs must be taken in a sequence with at least a 50 percent overlap. Vertical photographs are usually used and scales of 1 to 20,000 or larger are preferred. Most Agricultural Adjustment Administration and other government photographs meet the scale requirement. Magnifying stereoscopes are used to bring out detail. Some highly specialized instruments have been developed, but they are expensive and not necessary for the type of interpretive work of interest here.

The interpreter is trained to pick out various characteristic features apparent

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¹Howard E. Conklin and Sherwood O. Berg, "A Preliminary Report on Developments in Land Classification Methods," N. Y. State College of Agri., Dept. of Agri. Econ., A. E. 688, December 1948. Kwang-seng Wang, *Quantitative Relationships Between Farm Management Factors and Farming Returns for Use in the Economic Classification of Land*, N. Y. State College of Agri., Dept. of Agri. Econ., A. E. 721, September 1949; and Howard E. Conklin, "Some New Directions of Land Economic Research In The Northeast," *Journal of Farm Economics*, November 1949.

on close inspection of the photographs. The characteristics he looks for depend upon his interest, and the task of extending the use of airphotos into new fields depends upon connecting new photographic features with their real-world counterparts. The following features, for example, are important to a highway engineer:

1. Topography—evident on stereoscopic inspection and mappable directly from the photos with the aid of special instruments.
2. Drainage patterns—evident on stereoscopic inspection.
3. Gullies, their shapes and distribution—generally evident on stereoscopic inspection.
4. Vegetation—evident in a usable degree of detail on stereoscopic inspection.
5. Soil patterns—evident in photographic color tones, supplemented by topographic, drainage and gully information and sometimes by information on vegetative cover.

Many photographic features can be connected with the things they represent only by taking the pictures into the field and actually identifying objects. This is true especially for such features as the photographic color tones that reflect soil differences. Constant field checking is necessary in most interpretive work, but need be done only on a sample-area basis. It goes almost without saying that an intimate knowledge of the subject matter in the field of specialization in which interpretation is being carried on is prerequisite to a high quality product.

With the necessary experience and background and a minimum of field checking on the spot, the interpreter can identify major land forms and the soils associated with them. River terraces, for example, are identified by their position, characteristically flat topography, a generally light color tone, and the absence of a well defined external drainage pattern.

Glacial till plains, in contrast, commonly vary more widely in color tone,

have a well defined drainage pattern often including gullies that in places are cut through bed rock, and occasionally include topographic discontinuities that reflect ledges in the underlying rock. Other land forms such as drumlins, eskers, morains, dissected plateaus and lake beds have their characteristic features. The glacial land forms that abound in New York are among those most easily recognized on airphotos.

Once the land forms of an area have been identified, a major step has been taken toward identifying soils. Photographic color tones, especially in plowed fields, supplement land form information at this point. Even differences in cultural features—in road patterns, field shapes, proportion of area in crops, etc.—tend to be associated with differences in land forms and soils.

The interpreter carefully pieces together various fragments of information in the light of his past experience and training aided by current field examinations. He can distinguish among gravels, sands, silts, and clays, or combinations of these, because each tends to be associated with characteristic land forms, soil colors, drainage patterns, gully occurrence and shape, and land use. Soil color, as reflected in photographic color tones, is one of the most important aids in interpreting the soils of New York. The indications are the same for the soils of similar climatic groups, but vary widely among the soils of different climatic groups. In humid and subhumid areas it can be assumed that well-drained soils will photograph light in color, whereas soils with poor internal drainage will appear in darker tones on the photos. Here the terms "light" and "dark" are relative. Soils will show up somewhat differently in separate areas and at various times of the year.

Drainage patterns reflect the internal permeability of the soil and differences in stream gradients and gully cross-sections are associated with differences in soil structure and differences in the substrata underlying the soil mantle. Large areas of granular material—river terraces, for example—exhibit little external drainage. They often contain enclosed pockets from which water escapes only by verticle movement downward through the underlying material. There may be a few large streams and a few small tributary gullies with steep gradients and a V-shaped cross-section. Areas of silts and clays—the denser and more plastic soils made up of finer particles—exhibit well developed drainage patterns. There are more streams in these areas because less of the water can permeate the soil. More gullies occur because of the greater run-off and the greater erodability of the soil. The gullies often have a low gradient and a saucer-like cross-section.

Thus by patient and persistent study the engineers have been able to develop techniques for getting, at low cost, much of the information they need in planning for road construction and other engineering structures from airphotos.

Foresters, too, have worked out their system of airphoto interpretation. They are using photos very widely in inventorying timber resources under circumstances where even sample cruises would be prohibitively expensive. The methods they have developed make it possible to estimate timber volumes by species, and diameter classes, within close tolerances, with only a nominal amount of field checking.

Applicability in Land Classification

"... The land classification methods being used at Cornell have more in common with farm appraisal techniques

than with any other clearly identified process in this general field."² This statement helps to understand the nature of the land classification process under consideration here. The process, being a kind of farm appraisal, involves adding up a variety of information into an estimate of value. Incomes of most probable buyers are emphasized in the classification work, rather than likely sale prices, but the same kinds of information are needed in both cases. How much of this information might airphotos supply?

A short study was undertaken in Tompkins County to obtain an introductory acquaintance with the usefulness of airphotos in classification work. The remainder of this paper summarizes the findings and ideas that came from this study.

Agricultural Adjustment Administration photos, taken in the summer of 1938, were used. They were examined in the light of the land class map prepared and published by A. B. Lewis in 1934. They also were taken into the field in an attempt to discover helpful clues.

In general, little difficulty was found in identifying abandoned and submarginal farming areas—Land Classes I and II. It became more difficult, however, to make separations between successively higher classes. This was expected beforehand. It is easy to differentiate wooded and brushy areas and unused fields from areas that are more intensively farmed. It also is easy to identify the broken topography, the high elevations and the poor soils that are the major causes of farm decline in the lowest land classes. As one goes up the scale, the task becomes more one of separating good farming areas from better ones. Here one must look for

² Howard E. Conklin, "Some New Directions of Land Economic Research In the Northeast," *Journal of Farm Economics*, November 1949.

more obscure clues. These and other clues are discussed below under the respective land classes.

Land Class I

As defined, Land Class I comprises those areas best adapted to recreation and forestry, where many of the farms have been abandoned and the fields are often covered with the second-growth timber. This second growth is immediately apparent on the photographs, for the trees are not as high nor as dense as the original woodlots, and they occur as scattered groups in the dull grey fields of this land class. Because public facilities and community services must be supported by non-farm incomes if they are to exist on a continuing basis in such areas, the roads, in general, are in poor condition—either unimproved or small secondary county roads. The farms are small and few in number; many of the farm buildings have fallen, and the farm land is not well kept. Brush and second-growth timber is taking over in fields that have passed out of production. The few cultivated fields stand out as white patches on the otherwise dull grey tone of the photographs. There are few active roadways in the fields, and barnyards and lanes are dull grey—grown up to weeds and grass. There may often be areas of reforestation that can be distinguished from second growth timber by the uniformly darker tone and by the alignment of the trees. Land Class I areas are on the rougher ground with steep slopes, idle fields, and many woodlands. There are many deeply incised stream beds and gullies, and the percentage of flat land is small. From the topography, color tone, and gully shape, the soils appear to be the finer grained and more poorly drained silts and clays.

There are not many roads in these areas, and they are seldom as nearly

straight as those on the flatter land. Straight roads, if any exist, are along the crests of ridges. On the photographs the buildings are obscure and are clustered together; they have no sharp outlines as do those in the higher land class areas. Thus, we see in the aerial photographs that:

- (a) The soil is poorly drained.
- (b) The topography is rough and eroded.
- (c) The areas are on higher ground—the farms being situated on the slopes or on the tops of the hills surrounding the more productive valleys.
- (d) The distance to market is great—this condition is aggravated by the poor roads.

These are the factors that effect the intensity of land use, and the interpreter can predict from his observations that the area is poor and would be most likely unprofitable to farm.

Land Class II

Land Class II areas are defined as being those in which some farming is being practiced, but which are better suited for recreation and forestry. The roads, again, are rather poor, and all the facilities in the area are deteriorating unless they are supported by non-farm incomes. Farm buildings are commonly small and in need of repair, and many fields are growing up to brush.

Identification by airphoto interpretation is facilitated by the grey color tone and absence of the sharply contrasting field patterns predominant in the higher land class areas. The color tone is not as indefinite as in Land Class I, and the farm buildings are more distinct, but usually are not large or in good condition. The tone is somewhat brighter than in I, because there are many more cultivated fields and less second growth. However, even in the cultivated areas, the color tones are still mottled greys and whites, there being many shaded areas in the

cultivated lands because of the poor internal soil drainage. The areas are often dissected by streams, but the side slopes may be cultivated and often the valleys themselves are wide enough to be cropped. Thirty percent or more of the fields have been abandoned. The cropland is on the more level ground with the steeper sides and often the tops of the hills in woodland. The woodlands are large—from 10 to 500 acres or more—and occupy a higher percentage of the total area than in the higher land. The area is serviced by some good roads, but local roads are narrow and unimproved, though tending to wind somewhat less than those in Land Class I areas. Many lanes and farm yards are grey from weeds and grass.

Thus, Land Class II areas, as seen on the photographs, are areas in which:

- (a) The soils vary considerably, a few being excessively well drained and others lacking satisfactory internal drainage.
- (b) The topography is hilly and eroded.
- (c) The economic distance to market is moderate, for the general area is served by a few good roads.
- (d) The proportion of land in crops is small, and of the crop land, much is in hay.
- (e) Many farm yards are inactive, and farm buildings are small.

From rather close inspection of the photographs, the interpreter may infer that farm businesses are small and not very profitable.

Land Class III

The definition of Land Class III states that the farms within the area offer a moderate chance for financial success and that they will continue to be actively farmed for a number of years. Farm capital is being maintained at slightly better than minimum levels and the area is economically healthy, but not prosperous. Most of the fields are, therefore, in use, and farming is fairly intensive.

On the airphotos, the land in Land Class III is more level than that of the lower land class areas. It may be dissected by a few major streams, and there are numerous smaller streams and gullies which accentuate the roughness of the terrain. These gullies often are bordered by small brush and trees that mark their outline; the smaller field gullies appear as dark grey lines on the lighter grey background. There are many small scattered woodlots, varying from 5 to 50 acres. The color tones are sharper and more distinct—a characteristic of more intensive land use. Color tones are still mottled, however, and indicate poor soil drainage and possible erosion. The farms are larger, and consequently the buildings are larger and better and show up more distinctly on the photographs. The highway pattern tends to be rectangular—a characteristic of more level areas—and is more complete; there are many good roads in the area. The percentage of the area in abandoned fields and second growth timber is small; the pastures and fields are well kept. There are many small towns and communities in or near the area offering market outlets and sources of supply.

For the purpose of airphoto interpretation, Land Class III areas appear to have:

- (a) Soils that are not uniformly well drained internally—the denser drift, silts and clays.
- (b) A terrain that is hilly, and in which the differences in elevation are accentuated by well developed surface drainage ways.
- (c) The area is in the immediate vicinity of small markets and closely connected to other markets by a reasonably good highway system.
- (d) Larger, more distinct farm buildings than in Land Class II; more active farm yards and lanes; more cultivated crops and less hay.

The existing differences between these areas and those of the lower land classes

are obvious, Land Class III areas having the advantage of more level terrain, deeper soils, and proximity to market.

Land Classes IV and V

The definitions of the higher land classes call for successively greater opportunities for success in farming—the higher the land class, the higher the intensity of land use and the higher the farm incomes. The farms in these areas are large, well kept, prosperous, and have good, large buildings. Schools, highways, and the like are well maintained. There is very little idle land; wood lot acreage is small; and most of the area is under active cultivation, or in well kept pasture.

The classification of farms in the more productive areas is somewhat more difficult than in the other areas, for there are no perfectly obvious indications as to whether the farm is very good or excellent. The "10-acre" grid system is most advantageously applied to these areas as a method of identifying more precisely the actual intensity of land use. Much of the classification in these areas would depend upon the proportion of land in crops, orchard, and pasture—quantitative information directly obtained from the photographs. In Tompkins there are numerous small wood lots in Land Class IV areas; however, as Land Class V areas are encountered the number of wood lots decreases. The roads in all the higher land class areas are generally good—there being a higher proportion of paved roads in the Class V areas. Again as more level ground is encountered, the highways develop a more rectangular pattern.

As in all land classification work, the soil differences between areas are important, but in these areas the soil and topographic changes are of a more subtle

nature, being confined to small variations in internal drainage and relief. The variations in soil characteristics are most important in these areas. The topography is, at most, gently rolling and, therefore, not a primary difference between the areas. Naturally, the better lands will lie on the level ground. Soil drainage, however, plays a very important role, for, although the largest portion of these soils are well drained, poorly drained soils do occur. In Land Class IV areas there will be slightly more of the darker, poorly drained areas in the cultivated fields than in Land Class V, where the fields appear almost white on the photographs. The cultural details are a special aid in studying these areas. The homes and buildings stand out distinctly. Careful study of these details gives the interpreter a basis for classification. The size and number of buildings, the distance between buildings, the general appearance of the farm—neatness and use—may all be determined from the photographs. As previously mentioned, a careful study of field use would also aid the identification.

Identification of the higher land class areas is possible with proper attention to the details of the area, such as:

- (a) Soils—varying soil drainage in an area would indicate land Class IV, for both land class areas lie largely on well drained soils.
- (b) The topography is flat to gently rolling—the higher land classes being located generally on the flatter, better drained soils.
- (c) The distance to market may be considered to be nearly constant for these higher land classes, for except under extreme conditions, this will not be an important factor.
- (d) Fields are large and distinctively shaded; farm buildings are large and clear-cut; and farm yards are active.

From the sharply contrasting color tones alone, the interpreter could judge that the areas are used intensively, and from some of the cultural details and the

minor differences in photographic color tone it is possible to indicate into which of the higher land classes an area would fall.

Summary

The classification of an area from aerial photographs becomes a systematic survey of many details. The task might be divided into the following steps:

1. Establish general boundaries by inspection of contrasting color tones and differences in topography. Land classes I, II, and III may be separated from each other quite easily in this way with practice. Mark these preliminary boundaries lightly on the photographs with a china marking pencil, so they may be removed later.
2. Study the obscure areas and questionable boundaries carefully, using the "ten-acre" grid to check field use, condition, and area. This information may be placed on a check sheet if desired, so that final classification may be made from the statistical analysis of the data.
3. Adjust and fix boundaries in position after the thorough examination.
4. Transfer the boundaries to a convenient base map of the area.

This brief study in Tompkins County suggests that airphoto interpretation can be a valuable tool in economic land classification. The lower land classes, in particular, can be differentiated with reasonable precision, once one has learned what photo characteristics are important in a given area. Preliminary maps, picturing all land classes, might

be prepared by qualified personnel, perhaps in winter, by using airphotos and soil maps. These maps would provide an advanced starting point for detailed field work, or could serve in the absence of more precise maps until time and money were available for detailed field checking.

It is very unlikely, of course, that present levels of precision and detail in the classification maps could be maintained by airphoto interpretation alone, or even by airphoto interpretation supplemented by limited sample-area checking. The appraisals involved in land classification work, looking to the future as they do, must be supported by first-hand information on how farm businesses are organized and how their organization has changed in the past. The judgments of the classifier should be checked, also, by direct contacts with farmers and farm groups. Airphoto interpretation can give the classifier valuable preliminary expectations, however, and can help him organize his observations once he is in the field. The unusual perspective provided by the photos should aid him in gaining area-wide impressions as quickly as possible. Airphotos maybe laid out for large areas and compared at will, whereas much of the perspective necessary for accurate classification is lost when the observer has to rely on his memory in the field.

Considerations For Reclamation Policy

By MAURICE C. TAYLOR*

FEW agricultural economists deny the need for revisions in (or perhaps one should say the establishment of) American reclamation policy. The objective of this paper is to establish the bases for the formulation of a reclamation policy which will be consistent with the general objectives of social and economic progress. Nothing new in the way of research technique is offered. Most, perhaps all, of the necessary apparatus and concepts have been developed in one place or another. The task is merely to bring together those tools and techniques and focus them on the problems at hand.

If the reclamation problem is to be approached rationally there must be at hand specific schedules¹ of means and ends. While it is realized that the "economic doctors" cannot diagnose perfectly and prescribe for the "growing pains" of economic dynamics, more adequate plans of action may be devised than have been available heretofore. An attempt will be made here to set up a rational process by which land requirements may be appraised and fulfilled. This paper is not designed to supply specific techniques for evaluating potential reclamation development. The objective is rather to draw up the specifications for a model which may lead to more adequate methodology.

The title of this paper implies a concentration on *reclamation* policy. To a certain extent the title is misleading be-

cause relatively more effort will be expended on the foundation, and the superstructure (reclamation *per se*) is apt to be skimpy. Perhaps one of the greatest shortcomings of the "specialized economist," e.g., the agricultural economist, has been that he has left the abode of the parent discipline (economics) too soon and has, perhaps, stayed away too long. He has been anxious, and admirably so, to tackle and solve the problem at hand, but in so doing he has often abridged the economic intricacies and factorial relationships that are so vital to satisfactory solutions. So, at the risk of approaching the problem so broadly as to obscure or alienate the ultimate problem, the writer has chosen to approach reclamation by way of the general route. This decision is based on the idea that reclamation occupies only a niche in agricultural and social development and as such can be appraised only in its full setting. Since the purpose is to introduce reclamation economics and policy, this approach seems justified.

A summary of the shortcomings of reclamation planning and action is found in the failure to coordinate economic theory with the determination of policy. From the standpoint of public welfare it is important that marginal analysis be applied to the expenditure of public funds and project returns. Since the public is presumed to have various alternative uses for its funds, it is desirable that the marginal returns from the various uses be equalized. In many cases, perhaps most, it is impossible or impractical to estimate dollar returns on public expenditures but in reclamation, where the expenditures consist of establishing business firms, fairly accurate

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¹ We need schedules of alternative resource uses or resource improvement to meet the needs of anticipated economic progress, i.e., as we are faced with alternative rates or types of economic progress we must be able to adjust either the stock or use of resources to conform to that progress.

estimates of both costs and returns should be possible. Two economic problems are involved. First, in order to assure adequate living levels for prospective farmers the production functions and the scale of operation for individual firms must be determined. Second, these cases must be aggregated so as to determine the preference for reclamation expenditures in relation to other public endeavors.

The Investigation Phases

Since reclamation policy, by definition, consists of the effectuation of means to achieve desired ends, the problem is that of determining the means and ends and establishing means-ends relationships. The problem is admittedly a difficult one. To inventory the existing means or resources is a gigantic task, and the task is further complicated when one comes to consider the accumulation of means by technical advance and capital growth. Neither is the resolution of ends an easy matter. Even when a primary end, such as the maximization of satisfactions through the equation of marginal utilities and prices among various groups of goods, is taken, the end becomes evasive under the dynamic movement of social, economic and political forces. In short, the adequacy of reclamation policy rests upon the accuracy of resource inventories and the determination of socio-economic ends, together with the predictions as to the course of economic progress. It is too much to hope that a reclamation policy can be formulated which could be rigidly adhered to during the course of economic progress. It should be possible, however, to devise a policy which possesses flexibility contingent upon the exogenous variables.

In order to approach the problem in an orderly and meaningful fashion, the investigation is divided into three sub-phases: (1) the primary phase—a land

inventory; (2) the secondary phase—a projection of food and fiber demands; (3) the final phase—an appraisal of means. Although the first two phases are extremely important, the final phase is expected to yield the end product and chief emphasis will be placed on sub-phase (3), alternative means of reaching the "land goal."

The Primary Phase. Most researchers in land economics and resource allocation have been stymied by the lack or inadequacy of classified resource inventories. If the land economist is interested, as he must be, in improving the means of agricultural production, it is necessary that he know what means are available in the beginning. If he is to be rigorous, he must consider not only the available land resources but the human and capital resources as well. This is made necessary by the fact that an improvement in *aggregate means* may be accomplished by *various factor combinations*. Too often the investigators in this field have divorced themselves from agricultural labor and capital problems. As a result, satisfactory solutions have been impossible in this "land vacuum." It is proposed, therefore, that this primary phase be directed toward obtaining an inventory of agricultural resources. It still remains, however, that in reclamation research land is the most relevant variable, at least in the sense that it is the one for which recommendations must be given.

The land classification project should embrace a physical accounting of existing and potential agricultural land, and the accounting must include qualitative as well as quantitative ratings. It is recognized that this classification task is largely one for the physical scientists, but the following is suggested as a generalized method for making land inventories. Each land area should be

graded according to *physical attributes* such as climate, soils and topography and location. The components of these attributes may be weighted according to predetermined specifications. Initially, the area in question (e.g., the United States) should be separated into broad climatic regions. After the areas have been graded according to *simon-pure* physical attributes a "use-efficiency rating" may be determined for each grade. The initial step, of course, will be to note the production capacity under existing use patterns. Subsequently, various use patterns may be superimposed on each grade by the use of "known" production functions in order to determine output efficiency under alternative land uses.

This classification is designed to serve as a basis for determining: (1) the existing and potential stock of land; (2) the existing land use; (3) the incremental change in output which may accompany recombinations of the productive agents; and (4) the incremental change in output which may accompany changes in the stocks of productive agents. There is a given specific amount of land, usable and potentially usable. The land being used is producing particular amounts and kinds of output under existing factor combinations and production techniques. The problem is then to determine production responses with factor substitutions and additions. The production goal is dictated by forces such as population growth, changing demands with respect to commodity groups, and the level of economic activity. Factor substitutions and additions may represent either a more nearly optimum combination of existing resources or changing factor stocks through natural progress and through induced change (e.g., reclamation). These latter phenomena, i.e., the progression of food and fiber de-

mands and the use of alternative means, will be dealt with in sub-phases (2), (3).

The Secondary Phase. The preceding section deals with the current capacity to produce agricultural output. As our economy progresses both in terms of production means and consumption units, we are faced with the problem of equilibrating food and fiber demands and supplies. This section is concerned with those phenomena which, if we are to plan for progress, must be anticipated. If we are to make plans which are helpful in fulfilling future demands, we must to some extent be able to predict future demands. The hazards of such prediction are well recognized, but our knowledge of demography and technology should permit fairly accurate estimates, at least qualitatively, of food demands during the next two or three generations. On this basis it is suggested that food and fiber demands be evaluated in light of population change, technological growth, expected state of economic order, and changing standards of living. These are considered to be the most important factors attending the dynamics of food demands and supplies.

Population change affects the land-food problem in two ways. Both the labor force and the consumption force are affected quantitatively and qualitatively by demographic changes. Notestein classifies populations into three demographic types: *incipient decline*, *transitional growth*, and *high growth potential*.² These types represent fertility-death rate relationships, the *incipient decline* state being one in which the fertility rate is below the replacement level, the *transitional growth* one in which population is growing rapidly but in which a declining birth rate trend is established, and the

² Frank W. Notestein, "Population—The Long View," *Food for the World*, ed. Theodore W. Schultz (Chicago: The University of Chicago Press, 1945), pp. 35-57.

high growth potential being one in which both mortality and fertility are high, with no evidence of a declining birth rate trend. The shape of the population pyramid common to these types has bearing on both the labor and the consumption force. The United States, being at or near the state of incipient decline, exerts less pressure on food demands than nations in the other categories. Furthermore, the longer life span associated with this state has an important bearing both on the size and composition of the labor force and the size and composition of the consumption force. Here, being concerned primarily with an essentially stationary population, one should expect the aggregate long-run demand for food to be extremely inelastic and that secular shifts in the demand schedule should not be rapid. Also, since a stationary population exerts less pressure on available resources, we should expect a larger per capita supply of production factors (chiefly land and other durable capital) in agriculture. It should be pointed out, however, that the latter follows only if existing resources are not depleted or if technological improvement offsets depletion.

The purpose here is to point out the importance of population considerations in formulating land policy. In land policy investigations, however, the population estimates to be used in forecasting food demands are themselves based on assumptions pertaining to technological, economic, social, and political change. This fact points further toward the necessity for maintaining flexibility in land policy formulations. At best, population forecasts can probably be made for no more than fifty years. Even then the land policy researcher must provide for alternative recommendations to coincide with population changes which may be different from those projected

from the model. This means that a "family" of policies must be provided or that it be made explicit that particular recommendations are valid only in a given setting.

A trilemma plagues the social scientists. The political scientist would like for the economist and the sociologist to provide him with a given socio-economic atmosphere so that he may concentrate on variations in political phenomena. Likewise, the economist would prefer to work in an atmosphere in which the socio-political variation is known, while the sociologist would prefer to have the state of economic and political order given. This trilemma need not lead to sterile conclusions or to policy that is applicable only to a specific situation. The economist, for example, need only specify the political and social setting to which his analysis applies and point out how his analysis may lead to different conclusions and policy recommendations if the "extra-economic" phenomena depart materially from the model.

How do demographic phenomena affect the land problem, particularly on the demand side? First, we may expect changes in age and sex composition to alter the demand for certain types of food as compared to others. Secondly, we would expect economic progress (which is highly correlated with demographic type) to alter both the relationship of food and nonfood demands and the demand among different types of food (e.g., animal products as compared to cereal products). The population problem is related to the land problem, and we are seeking the answers to the following questions: How does any population change affect the *aggregate* demand for food? How is the *composition* of that aggregate affected by demographic change? The final question inquires into the means of adjusting the stock of land

and other agricultural resources to conform with these changes.

Technological change has been dealt with, at least implicitly, in connection with population changes. There appears to be no way of dealing with technology, per se, i.e., of evaluating its quantitative effects in the future. There are, however, some qualitative aspects of innovation which should be viewed in connection with the land problem.

Professor Hicks categorizes innovations as "labor-saving," "capital saving," and "neutral" according to the relative effect on the marginal productivities of the factors concerned.³ We may add to this classification "land-saving" innovations.⁴ Since Hick's definitions are couched in terms of the effects on the marginal productivities and deal with the related elasticities of substitution, they serve well in analyzing the impact of innovations on agricultural factor returns. If, as is commonly supposed, innovations in American agriculture are largely labor-saving, the income problem of agricultural labor is enhanced. If innovations are land-saving the pressure of food demands on the land supply is lessened. All innovations must increase the ratio of output to input for the economic unit concerned. With respect to the land problem the important aspect of the innovative element is whether the supply of land is increased or decreased. A land-saving innovation is tantamount to an increase in the supply of land, while a land-using innovation corresponds to an increase in the demand for land. So considerations regarding innovative types are highly important in connection with policies designed to affect the supply.

Some speculation as to the future impact of innovation on the returns to

specific agricultural factors is in order. Heady points out the fact that many of the agricultural innovations have been and are apt to be of a "land-embodiment" nature.⁵ If this is true, the stresses and strains which might otherwise be created by additions to the stock of land are not so likely to occur. On the other hand, if innovations are land-saving the agricultural problem may be aggravated by the production of "new" land. Innovations since the beginning of the present century have accrued largely to the field crops, particularly wheat, other small grains, and corn. This is particularly true of mechanical processes, which have been slow in coming to the animal and specialty crops. An abundance of cheap land served as an impetus to expanding farm size. In other words, expansion was largely at the "extensive margin." Within rather recent years innovation has begun to take hold in potatoes, sugar beets, cotton, and the livestock and livestock products industry. It seems reasonable to expect that much of the recent progress will be absorbed in firm consolidation and/or a more intensive use of capital. This may yet be land-embodiment in Heady's terms of increasing the proportion of land input to capital-labor input, but unless the innovation results in an increased marginal productivity and consequently an increase in the demand for land, it is not particularly relevant to the land problem except in a negative sense. For this reason, i.e., that we are chiefly interested in the factors affecting the total demand for land, it seems preferable to define factor-saving in terms of changes in marginal productivities rather than in terms of the ratio of land input to other kinds of inputs.

Dr. Schultz has emphasized "advances in nutrition as technological improve-

³ J. R. Hicks, *The Theory of Wages* (New York: Peter Smith, 1948), Chapter VI.

⁴ See Earl O. Heady, "Basic Economic Aspects of Farm Technology," *Journal of Farm Economics*, May 1949.

⁵ *Op. cit.*, p. 304.

ments." It is in this sense that nutritional elements have an important bearing on food consumption. It would be an error to base land policy on the assumption that the efficiency of food in satisfying body requirements is a constant factor. As more efficient methods for producing given results in either human or animal feedings are introduced, resources are released for either feeding more humans and animals or for producing nonfood items. Therefore, it is necessary to give some attention to nutritional developments when planning for complementarity between economic progress and food production.

Mention has been made previously of the changing composition of food demands with economic progress. Given a certain degree of economic progress, which may be considered as synonymous to an increase in real income per capita, we may expect both the aggregate demand for food in relation to the demand for nonfood items and the composition of that aggregate to change materially. Dr. Schultz estimates the income elasticity of demand for food at .25.⁶ Whether this figure is accurate is not known, but available evidence indicates that the elasticity is certainly much less than unity. It is presumed that the income elasticity for the grains and "starchy" foods is significantly below that for such foods as livestock products and fruit. Therefore, as economic progress occurs, the demand relationship between food and nonfood changes in favor of the latter. If this be the case, either the real value of farm incomes must in the long-run decline or agricultural efficiency must improve. Reclamation policy should perhaps point toward those farm crops which have a relatively high in-

come elasticity of demand and certainly toward those areas which have prospects for high production efficiencies. In any event, the "use-suitability" of potential areas, together with the location of those areas with respect to consumption centers, should be given a good deal of attention. Marketing and transportation techniques also have an important bearing on development feasibility.

It has been recognized and emphasized that the stresses and strains from general economic disorder outside of agriculture have been the cause of much, and in some opinions most, of the distress in the agricultural sector. Sound reclamation policy must, to some extent, be based on the levels of employment, output, and prices which may prevail. Although it is true that in this land policy problem we are concerned primarily with the impact of rather long-run secular phenomena, the consistency of secular progress with short-run fluctuations in the main economic magnitudes is an important consideration. If we plan for a high level of economic activity and if that level is not in fact achieved, agricultural surpluses will be more burdensome. If we are at the same time fostering programs both to relieve the effect of farm surpluses and to add to the stock of agricultural land, we are adding fuel to the fire under a pot which is already boiling over.

It has been proposed that reclamation development be used as a countercyclical device. It is pointed out that the opportunity cost during depressed periods, particularly the opportunity cost of labor, is extremely low. The policy maker is thus entwined in a dilemma which consists of "too much" on the one hand and plans for more on the other. A partial solution may be found in constructing projects during recession for operation during the forthcoming period of prosperity. It is here that the relationship of

⁶ Theodore W. Schultz, *Agriculture in an Unstable Economy* (New York and London: McGraw-Hill Book Company, Inc., 1945), p. 68.

income elasticity of demand and population change to agricultural progress becomes important. The addition to total agricultural production from the development of any particular irrigation project or during a particular year is bound to be small. The accumulative impact of new developments on total production over a period of years is apt to be significant. With a low elasticity of demand for farm products, enhanced supplies have relatively large effects on farm prices and farm income problems arise. It is not implied here that land policy should be used as a production control device in the usual sense; it is implied that land policy should be coordinated with cyclical changes.

The Final Phase. Given an increased need for farm produce—and it is inconceivable that some such need will not arise during the next half century—there are, in general, two means of meeting that need. First, increased demands may be met by recourse to the so-called “intensive margin.” The “intensive margin” is not a completely accurate term because the process may involve decrements of land in some areas and capital increments in others. The process is intensive, however, in the Ricardian sense of concentrating inputs on the land which is currently in use. Alternatively, increased demands may be met by recourse to the “extensive margin,” i.e., capital and labor inputs may be applied to land that was previously “sub-marginal.” These methods will be labeled *intensive expansion* and *extensive expansion*, respectively.

Given a constant state of technology, considerations for affecting certain changes in existing use patterns and intensities presuppose some maladjustment in the original situation. If we were to suppose that under given demand and technical conditions all firms were equat-

ing marginal costs with marginal revenues and marginal factor costs with the marginal value product of the factors, the only remaining problem would be contained in the probable social losses of monopoly. If the position is not one of disequilibrium, factor substitutions and additions are uneconomic.

An extensive study by Schultz, Johnson, et al., regarding the efficient utilization of agricultural resources is underway at the University of Chicago. The results of this study should give a good deal of insight into status of agricultural resource adjustment. But until such time as more quantitative information is available, the meager evidence which is available will have to serve as a guide. There is, however, much evidence which indicates that agricultural resources are not in general being employed so as to satisfy the marginal conditions for equilibrium and optimum allocation.

If capital rationing and “labor dissipation” are as prevalent in agriculture as Professor Schultz suggests,⁷ America’s capacity to produce agricultural output far exceeds actual production under the present state of efficiency. Although such wide extent of capital rationing may be questioned, it seems reasonable that the practice is common enough that significant intensive expansion could be achieved by erasing the causes for such rationing. Investigators in this area are prerequisites to problem-solving in the land economics field. The need for research leading to the derivation of production functions by type of farming and land quality is emphasized.

Another area in which intensive expansion may have some latitude is that of soil conservation and soil management.

⁷ See his “Food and Agriculture in a Developing Economy,” *Food for the World* (Chicago: The University of Chicago Press, 1945), p. 315; and “How Efficient is American Agriculture?” *Journal of Farm Economics*, August 1947.

The term "conservation" is used here in the broad sense as denoting action designed to maintain or improve the gross productive capacity of existing farm land. As such, conservation is synonymous with capital input and if we believe that capital rationing is prevalent, we may also suspect that "conservation capital" may also be rationed. This is particularly likely because of the importance of the time element involved and the accompanying uncertainty. Insofar as "conservation capital inputs" may require longer run considerations, and insofar as information concerning the flow of returns from conservation inputs is lacking, we may expect divergence between the rate of interest and the rate of return on conservation inputs. Neither the magnitude nor the direction of such divergence is known. Such data are fragmentary and there is great need for work on production functions with respect to conservation inputs.

Summarily, the areas of intensive expansions which need to be investigated are: (1) the size of firm; (2) the internal organization of the firm; (3) the size and organization of specific industries with respect to commodity demands; (4) the status of capital rationing and its significance to firms and industries; (5) the significance of conservation in expanding the means of production. These areas of investigation are complicated and interrelated, but it is believed that such work is fundamental to land policy research. The available information is scanty, indeed, but if land policy researchers wait for complete answers to these basic questions, action programs will always be a step ahead of the researchers. It is not recommended that the land policy researcher hold out for precision, but rather that he formulate "families" of policy based upon various combinations of premises which may or

may not be valid. These families may be ranked according to the indicated validity of the premises so that action may be changed to conform to the accumulation of empirical information. In this sense the political economist is like the physician who is required to prescribe relief although he does not know the causes underlying the disease. As the medical researcher gains insight into disease phenomena, the physician's treatment is improved. Just as the physician does not feel justified in letting the patient die merely because he cannot complete a cure, neither should the political economist. Both, it is true, should take care that their action does not hasten the death of the patient.

Extensive expansion as here defined consists chiefly of irrigation, drainage, and clearing development. In the United States the term "reclamation" has become almost synonymous with irrigation development. Since irrigation development is considered the most important method of "producing new land," it is given primary consideration here, and only passing notice is given drainage and clearing. Extensive expansion cannot be considered apart from intensive expansion. Optimization requires that each be carried to the point of indifference, i.e., to the point where marginal cost is equal to marginal return and where the ratio of marginal factor cost to marginal factor return is equal in the two areas.

The foregoing is directed toward determining the general role of reclamation in agricultural progress. Now, under the assumption that reclamation does occupy a niche in the land resource program, how should we go about determining which land and how much of it is to be developed?

Let us make the Utopian assumption that the agricultural economy is in ad-

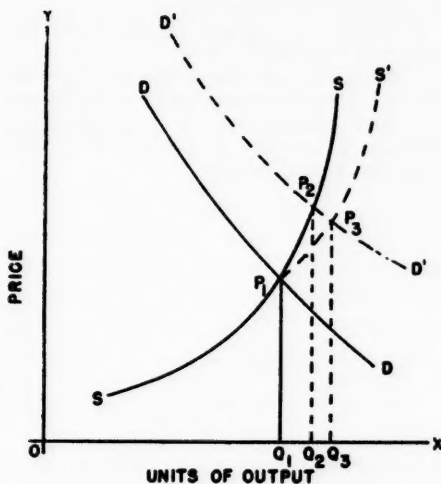
justment and that the long-run supply curve of agricultural output has become extremely inelastic. This means that agriculture is producing at full capacity. Now suppose that we are experiencing economic progress and that the aggregate demand for farm produce is shifting to the right. This may represent a favorable situation for agricultural firms, but it is an indication that society needs more food and fiber.

The situation is given graphically in Figure 1. The line $D'D'$ represents the increased aggregate demand, and SS' is the projected aggregate supply. The segment SS represents the completion of intensive expansion, and SS' represents the limits of extensive expansion. The slope of the segment P_1S' encompasses the long-run reclamation development schedule.

If the economic units or prospective economic units concerned had perfect information and foresight, and if resources were completely mobile, the segment P_1S would not exist because SS' would then represent supply responses per unit of time. Presumably, though, irrigation reservoir and distribution system construction enjoys considerable economies of scale, and without public intervention the supply segment beyond P_1 would be more steeply inclined than P_1S' . Given the demand function, the task of the reclamation economist is to determine the slope of P_1S' ; he needs to be in a position to tell the policy maker that incremental output Q_2Q_3 can be obtained at a price of P_3 . This involves an analysis of all the forces that affect the slope of P_1S' and is analogous to providing the production functions for prospective irrigation areas. Again, it must be emphasized that the investigator must lean heavily upon the physical scientists and agricultural technicians for information regarding factor qualities, land use capa-

bilities, etc. The economist's job is to compound the physical techniques and capabilities into an economic entity.

FIGURE 1



It is presumed that the response contained in the line P_1S' includes not only the costs incurred directly by the various firms but also the cost of alternatives foregone by society in providing public capital. Otherwise the curve will appear more elastic than is consistent with the maximization of social gain. A true equilibrium will be established only if this is done. Different action results in a subsidy to the production units concerned, and while one may be in sympathy with that subsidy on welfare grounds, an optimum capital input will not take place. Aggregate welfare gains would be achieved by divorcing the subsidy from the development unit.

It is suggested that a "reclamation time table" be compiled so that development may be kept abreast of economic progress. The procedure for compiling this table is as follows:

1. Provide detailed physical inventory of potentially irrigable land which will include

soil, topographic, climatic, and locational attributes

2. Determine the use efficiency for each land grade as dictated by the physical and economic environment

3. Compile a schedule of construction costs as based on engineering estimates

4. Derive the production functions for operation at optimum scale

5. Determine development feasibility with respect to various demand and cost conditions

6. The ultimate goal is a development schedule which may be applied to various rates of economic progress

In summary, the procedure for establishing reclamation policy requires answers to these questions: (1) What do we have in the way of land resources? (2) What are food and fiber demands apt to be when we consider demographic, technological, economic, and social change? (3) What are the alternative means of meeting these demands? (4) What is the role of reclamation among these means?

The British New Towns—A Case Study of Stevenage

By ROBERT B. BLACK*

ONE of the recommendations of the Greater London Plan¹ calls for the decentralization of 380,000 persons to new satellite towns outside the Green Belt Ring. Thus, for the first time, the Garden City idea reaches full recognition in plans for the reconstruction of London. To date, eight sites have been designated for Greater London,² though not in the precise spots suggested by Professor Abercrombie. Two New Towns are underway in Durham; these are to serve a centralizing function, quite different from the London problem. Other sites have been selected in Wales, Northampton and Scotland. What was once the Utopian Dream of Ebenezer Howard is now to assume concrete form.³

Stevenage is typical of the New Town in its primary function, that of absorbing decentralized population from the core of the large city. The existing nucleus of the town is 6,000, smaller than Hemel-Hempstead (20,000) and larger than Crawley or Harlow (3-5,000). These four, all under way by early 1947, are the only ones developed enough to permit extensive observation in 1951.

Designation of the Site

Stevenage lies on the edge of the Chiltern Hills, in the lovely country of Hertfordshire. The town center itself, a small part of the chosen site, has Roman ruins, and was listed in the Domesday Book (1059) as worth £12 a year. It is

situated on the Great North Road, twenty-nine miles from London, and a few of its 6,000 inhabitants commute to the city daily. The 1930's brought a migration of light industry to Stevenage, together with a rapid growth of population. Thus while its rural hamlet character was lost before World War I, there is still considerable charm about the town. The wide tree-lined High Street has some fine half-timbered houses, and the parish church (twelfth century) attracts tourists as well as occasional worshippers. The surrounding countryside is rich in scenic landscape, fine fields and attractive farmsteads.

The residents of Stevenage, well before World War II, began to zone new developments. The Stevenage Urban District Council (in whose jurisdiction about one half of the New Town site lies) hired a consultant to prepare a planning scheme for the balanced growth of the District to 34,000 people, indicating that there was an early awareness of the merits of planning. Nothing came of the scheme but when one of the London councils made investigations for the location of a postwar housing estate in Stevenage, its proposals were given a favorable reception. The Stevenage area also had all the prerequisites for a New Town of 60,000 people: good transportation routes, flat land for industrial location, gently sloping land for housing, farming land of second or lower grade, an existing nucleus and political organization, ample potential supply of water.

In the summer of 1945 the Ministry of Town and Country Planning, (to become, early in 1951, the Ministry of Local Government and Planning) acting on Abercrombie's recommendation, began

* U. S. Bureau of the Budget, Washington, D. C.

¹ Patrick Abercrombie, *The Greater London Plan*, 1944 (London, H.M.S.O., 1945.)

² These are: Stevenage, Herts.; Hemel-Hempstead, Herts.; Crawley-Three Rivers, Surrey; Harlow, Essex; Welwyn, Herts.; Hatfield, Herts., a joint project; Basildon, Essex; Bracknell, Berks.

³ Ebenezer Howard, *Garden Cities of the Future*, Ed. by F. J. Osborn (London, Faber & Faber, Ltd., 1946).

to prepare a draft plan for a Stevenage New Town. Before the scheme was even announced, there was a hardened opposition to it. The Reith Committee⁴ had not yet reported, the New Towns bill was still undrafted, and the Ministry was restricted to the use of inadequate powers under the 1932 Planning Act.⁵ When letters were sent to property owners in accordance with this statute, inviting them to sell 5,500 acres to the Government, there was a strong public reaction which resulted in the immediate creation of the Stevenage Residents' Protection Association. The daily press brought the story before the public in a highly dramatic way. Quite justifiably, Stevenage people felt themselves the victims of dark scheming in Whitehall. All inhabitants believed that their homes were threatened with demolition, and that they would be compensated for them only at 1939 values plus 30 percent (this rate unquestionably was unfair).

In April 1946, the Ministry sent officials to Stevenage with draft lay-out plans and instructions to make peace. But the plan called for an arterial highway through the middle of the sacred cricket pitch, and the removal of houses on Fairview Road, where town councilors and other important residents lived. This delayed release of the plans for public perusal and did little to win supporters to the New Town idea. Two weeks later, the Minister, Lewis Silkin, came to Stevenage. There had not been so much excitement in the High Street on a May morning since the Conquest. On arrival, Silkin was greeted with signs reading "Hands Off Our Homes," by teeming crowds of irate residents, sym-

pathizers, and the gentlemen of the press, there to pass this on to the rest of the world. Before a very noisy and uncomplimentary audience, the Minister tried to put his case for the defense of the plan. Highly provoked, he lost his ministerial temper, pronounced an epithet or two, and stated, "This project will go forward because it must go forward," words which were to be used against him before the Courts. Mr. Silkin left town under a heavy police escort.

Shortly after this episode, the New Towns Act was passed. This bill had been considered while the Stevenage trouble was going on, and certain provisions were attached as amendments to prevent a reoccurrence of such a fiasco. The Ministry began over again on the Stevenage New Town designation, following the Act's provisions for an advisory committee, local consultation and an official inquiry. The latter was held in October, and many objections were duly made: that Stevenage was too close to London to become a self-contained town; that good agricultural land would be lost; that the town would be robbed of its unique character; that water and sewerage problems could not be overcome (this, the most cogent point, was made by the Metropolitan Water Board and Lee River Conservancy).

The following month, a ministerial order designated Stevenage as the site for a New Town. The local large landholders, backed by some of the disgruntled Fairview Road residents, decided to fight. From December 1946 to June 1947 the fate of the New Town lay with the courts. The Minister's Order was finally upheld, but not before local wits had taken down all the signs of the Stevenage Railway Station and hung new ones, lettered in red, Russian-like script, "SILKINGRAD."

⁴ The New Towns Committee (Lord Reith, Chairman) appointed October 1945 to consider general questions of establishing New Towns. There were three reports, all issued in 1946: *Interim* (Cmd. 6759), *Second Interim* (Cmd. 6794), and *Final* (Cmd. 6876).

⁵ Town and Country Planning Act, 1932, Sec. 35.

Because Stevenage was the first of the New Towns, its early days reflect a trial and error approach by the Ministry. Quite obviously press relations were mishandled; and poor decisions were made at every juncture. Most serious was the evidence that the Ministry disregarded the human side of the planning process. Stevenage was as much a "test case" for administrative ability on the presentation of a plan, as for substantive planning technique itself. The Ministry apparently has learned its lesson for, in succeeding designation processes, relations with the public have been handled exceedingly well. The price of the lesson was high, however. Stevenage, in its early development, is beginning to show the lack of proper prenatal care.

The Master Plan

The Outline Plan for Stevenage was drafted during 1945 at the Ministry by Gordon Stephenson, one of Britain's prominent planners, now head of the Planning School, University of Liverpool. This is a unique case. The plan was undertaken by the Central Government because Stevenage was regarded as the prototype of New Towns in general, and because there was then no corporation or other machinery to appoint a chief architect on the site. After the Corporation came into being in December 1946, a new permanent architect, Clifford Holiday, was selected, and he has been concerned with the Plan since then. While the Outline Plan was considered technically brilliant, in spite of a few flagrant social miscalculations, the ethics of the professional planners code dictated that Mr. Holiday should not have to base his detailed plans on a fellow planner's Outline Plan. Throughout part of 1947 and all of 1948, modifications were made, and it now seems advantageous that there were opportunities

to apply experience gained on the site to what must have been largely a theoretical approach to the problem.

The Master Plan itself calls for a New Town of 60,000 inhabitants, occupying 6,070 acres, or an area of about 2.5x3.5 miles. There will be six residential neighborhoods; Stevenage, with its existing 6,000 people as one; and five new communities of 9,000 to 14,000 people, as the others. Each area has its own schools, shopping centers, and other community facilities. Green "wedges" help to break up the areas and provide open space. Fields on the outskirts of the site provide a narrow green belt, which will be supported by an external belt, preserved through general planning powers. The highway Plan provides a by-pass for the Great North Road, thus preserving the old High Street from through traffic. Water is to be supplied by new wells; sewerage disposal, a major problem, requires a large works outside the area to be used jointly by Stevenage and Harlow New Towns.

The plan involves about twenty years of physical construction, currently estimated to cost over £25,000,000. The first phase consists of constructing utilities and roads, and a part of one of the six communities for the housing of some of the 4,000 workers which will be needed on the job at the peak year (1957). This first stage will take about three years. Only the land necessary for its completion will be acquired in the year 1951, and in all respects existing use is continued until construction work actually begins on each plot. Progress has been slow, both on paper and in a physical sense. The awkward activities of the Ministry in 1946 have necessitated a cautious pace in plan revision. The shift of planners has cost perhaps a year although, as has been indicated, the plan will be better for this re-approach to the problem. The

court cases froze all work for seven months. And finally, the 1948 cut in capital investment program has further slackened progress. The first outside work was commenced in July 1947—the construction of about 100 “prefab” residences for members of the staff. This remained the extent of evidence that a New Town has been situated on the sloping lands of the Stevenage area until the end of 1949, when work on land utilities began. In the closing months of 1950, five years after the first Ministry Plan was drafted, about 500 houses were completed or underway. It is hard to put skeptics off by mentioning that the White Paper of 1948⁶ permitted a total construction force of but seventy-five men on all of the New Towns. The author's own observation is that, if 4,000 men had been made available, there would still be little evidence of a New Town, for the planning, physical and administrative, of such a vast enterprise is a time-consuming operation. Since the town is to be lived in for perhaps a millennium, it is reasonable to spend two or more years in planning it.

The Development Corporation

When the Reith Committee recommended, and the Government accepted, the use of the public corporation as a device for New Town development, it opened a long series of questions about the functions of such a body. The New Towns Act was rather loosely drafted, but it emphasizes that the Development Corporation is something of a blend of the local authority and the public corporation as used for transport, coal and other public services. Rather than holding planning powers as a local authority would, the Corporation controls development by virtue of its ownership over all

the land. In this sense the Corporation is a business corporation, concerned about construction costs, the rents it must charge, payment of funds to the Central Board in lieu of development charges, and its own attractiveness to resident or industrialist. On the other hand, it is similar to the local authority in some ways. It prepares plans, provides essential services, and acts as a statutory undertaker for some services. One special characteristic is its complete dependence on the Exchequer for funds, at least initially. The growth of the concept of the Development Corporation will be interesting to watch, for there are few precedents and no prescribed doctrine.⁷

What of the Stevenage Corporation at present? The Ministry in December 1946 appointed the Advisory Committee under the designation proceedings to become the Corporation. Clough Williams-Ellis, the first chairman, was succeeded by Sir Thomas Gardiner, and a year later by the Reverend Charles Jenkinson. Upon the latter's unfortunate death, Dr. Monica Felton, vice-chairman in the first days of the Corporation, returned to Stevenage as a strong new chairman. The other six members of the group include Phillip Ireton of the Stevenage and Hertfordshire councils; Mrs. Elizabeth McAllister, writer and housewife; two members of the councils of Greater London municipal boroughs which will be “exporting” population to the New Town;⁸ and two business men from Greater London who are especially fitted for the nature of this work. The chairman receives a salary

⁷ For a very brilliant treatment of the theoretical problems of the Corporation, see W. O. Hart, “New Town Development Corporation,” *Public Administration*, Autumn 1948. Mr. Hart is the exceptionally able general manager for the Hemel-Hempstead Corporation.

⁸ Each New Town in the Greater London area serves a particular quarter of the metropolis; Stevenage will receive families from the outer northern districts.

⁶ White Paper, *Capital Investment in 1948* (Cmd. 7268), London, 1948.

of £1500, the ordinary members £400. Each New Town Corporation has its own personality and imparts it to some extent on the staff. The Stevenage group, in general, is "liberal," bold and less inclined to hold a business point of view, than some others.⁹ But there is less of a personality stamp at Stevenage, perhaps, because of lack of continuity at the top, and a practice of majority rule in corporation-policy formulation by the corporation in policy matters.

A corporation general manager is in a strong position to shape the destiny of his New Town, and so the Ministry has picked the cream of experienced administrators for this key job. The Manager at Stevenage is Major-General A. P. Duff, who retired from active army service after World War II. His principal officers head separate staffs of estate managers, architects, planners and engineers. As the staff, now about 150, including clerical and maintenance people, is increased and the pace quickens, devolution through committees of specialists will be necessary. At present, there is one standing staff committee, called the Planning Committee, composed of three corporation members, the general manager, and chief officers who meet weekly to discuss matters too urgent for the bi-weekly corporation meeting. Here, detailed matters affecting design, lay-out and personnel are considered.

Staffing has been a major problem at Stevenage as elsewhere, for there is a constant competition for competent men. The Ministry tries to prevent theft amongst the corporations by passing on all appointments carrying more than about £1200. But even so, Stevenage has lost two of its best men recently, and

there is a rapid turnover at low levels. The hiring of industrial workers, needed in large quantities by 1952, will cause additional problems. One of the aspects of building a town in the country is the difficulty of importing skilled men there to work.

Central Government and the Corporation

The greatest unknown factor in the New Towns Corporation is the relationship of the Development Corporation to the Ministry of Town and Country Planning, to other central departments, and to Parliament. The earliest thinking about this was based on the concept that the corporation is in the position of a corporate civil servant to the Ministry. This is a naive idea, for the ties laid down by the Act itself are more formidable than that indicates. Some of these specified relationships are:

- (a) The Ministry creates the corporation, appoints its members, issues the designation order and terminates its being.
- (b) All expenditures, actual and proposed, are reported monthly to the Minister, who in turn is responsible to the Treasury.
- (c) Three proposals need Ministerial approval: for land acquisition, development of the detailed plan, and contribution to the local authority where its services are provided to the corporation. The second of these provides opportunity for close control over minute operations.
- (d) The Minister has the power to direct, but has not had to do this so far. The master plan is submitted as a matter of common agreement, backed up of course with the threat of formal direction.
- (e) Also, annual reports are required, and an auditor appointed by the Minister inspects the books of corporations.

This provides procedures in which friction may easily develop. General managers are in constant touch with the Ministry's New Towns Department, and also technical advice informally comes down from Whitehall. The only formal device for lessening friction is the Minis-

⁹ Crawley Corporation is, for example, very reflective of the strong, private enterprise thinking of its chairman, a strong personality, Sir Thomas Bennett. Hemel-Hempsteads has also some of these characteristics, from its chairman, Lord Reith.

ter's Standing Conference of Corporation chairmen and vice-chairmen. (The Chief of the Ministry's New Towns Department is included.) This meets every three months in London, with the Minister in the chair, and serves to air major grievances and set basic policy.

It is the general managers who in their daily work find most difficulty in meeting the detailed control placed upon them by Whitehall. They meet semi-weekly in a completely independent committee of general managers. Their principal complaint is that the Ministry asks too many questions. Since no block grants are made by the Exchequer, the Ministry feels it necessary to have answers for each detail of financial control. He is the Minister responsible to Parliament, and is most sensitive of this. This is only another case of the standing question as to the relation of a public corporation to government. If the Minister is held for broad policy matters only, will all matters of detail be left to the corporation's discretion? Where is the line between policy and day-to-day operation drawn? The Minister, with his and the Government's honor or pride at stake, will interpret this in a narrow way.

There are a great number of other government agencies with which the corporation has frequent contact. Industry is allocated by the Cambridge regional office of the Board of Trade; a firm wishing to build in Stevenage must first clear with them, and the corporation then has the power to refuse or accept. This is not an immediate concern at Stevenage, because no more industry can be taken for three or four years. But the complications of this procedure already seem formidable. The Agricultural Executive Committee, charged with keeping up food production, enters the picture in the land requisition process. The most recent outside force affecting

Stevenage planning has been the Home Secretary's Office, which drafted a bill calling for state management and ownership of public-houses in New Towns. Unfortunately, that office did not consult the Ministry of Planning, which has interests in such matters. The corporation officials were irate, for this proposal was a threat to their independence and, in addition, seriously interfered with their schemes for layout and social organization.

Those facts point to a need for co-ordination of Central Government activity in relation to New Towns. But more important is the need for clarification of the position which a corporation bears in relation to the Ministry of Planning. If real independent character is a desirable feature of the corporation, more scope must be granted. The managers are sensitive about the lack of freedom. As the corporations grow older and gain in stature, the Minister perhaps can feel that they are qualified to move alone. Until the financial controls of the Treasury are modified, however, this alone will not be sufficient to set the corporations free.

Local Government and the Corporation

While the exact status of the corporation government relationship is not yet known there are equally perplexing questions about the corporation-local authority relationship. The Stevenage site lies within three different units of district government, but it falls within the single planning authority of the County of Hertfordshire. It is hoped, in the first respect, that local district boundaries will be adjusted so as to place all of the New Town designated area within the jurisdiction of the Stevenage Urban District. This will simplify the problem for, as the New Town grows, the functions of collecting rates and providing the usual

services will be assumed by the Stevenage Council. And when the corporation is dissolved (in 1970 perhaps) the Council will take over the complete affairs of management. At the present, no rates are paid to the councils, but the corporation makes contributions to them for the use of such undertakings as the water and sewerage systems. The general hope is that local government will do as much as possible of the normal business of running a town, including education, street maintenance, hospital management; but not housing, for which the corporation will act as a separate authority during the development period. In the case of water supply, because there is no local authority large enough to do the job, the corporation will become a statutory undertaker, operating what will be practically a subsidiary company for this purpose. But in all the other cases the picture of the corporation is that of a contractor called in to develop new subsections; and then that of an estate manager, to let space to residents, shopkeepers, or industrialists; while all the time, the political and other normal functions of local government prevail through the Stevenage Council.

There are, of course, many areas of potential friction between Corporation and Council, and the early history of the Stevenage case enhances the opportunities for temperamental conflict. The corporation meets the Council on occasion to discuss certain aspects of the master plan, but there is no standing consultative machinery.¹⁰ There have been no overwhelming difficulties between them to date. But on the next higher level, where the county operates its planning powers, there have been some serious disagreements. Technically,

planning consent must be secured from the Local Planning Authority for all developments, just as if the corporation were a statutory undertaker like a district council. In matters like trunk roads, sewerage, water, and many others, the county plan must correlate with the Stevenage Master Plan. (And, as it happens, Hertfordshire has three other New Towns within its borders: Hemel-Hempstead, Welwyn and Hatfield.) The corporation is as anxious as the county to work together, for it desires planning powers to be used to protect the Green Belt around the outside borders of the towns, and depends on the county, or its Areal Planning Committees, in many other ways. Compromise often is necessary. When differences cannot be resolved, the problem must be carried to Whitehall for settlement by the Ministries. It may be necessary to provide an arbitration system to solve some of the common day-to-day planning problems for the future will produce a harvest of intricate matters over which corporation and council will squabble.

Problems and Progress

The Stevenage New Town Corporation, in its four years of operation, has met and solved a number of novel problems which are bound to occur in any new organization administering a revolutionary policy. Timing of operations is a particularly physical problem which places great demands on administrative skills. Once construction begins, there must be no stop, for the intricate meshing of the many faceted forces involved would be upset. The manager must see that the operations load is a constant factor, and this demands extraordinary farsightedness and coordination. In many respects the postwar period is the worst time for New Town undertakings because costs

¹⁰ It must be remembered that the original Stevenage is a quite small town. The only permanent council staff consists of the Town Clerk and City Engineer. Thus the corporation overbalances the weight of the local government.

are threefold greater than the 1939 level. Corporations are reluctant to commit themselves to costs which bear no relation to what future rents may bring. The quasi-business-concern nature of the corporation demands consideration of this problem, and at the same time responsibility to the public in its needs for housing *now*, which after all is the *raison d'être* of the satellites.

Early in 1950 the Ministry finally gave approval to the Stevenage Master Plan, and granted permission to undertake a three-year land purchase program.

Gordon Stephenson, who first worked on these plans, has been brought back to help the staff develop the basic plans further. With the persistent drive of the new corporation chairman behind them, these plans should soon take concrete form on the hills of Hertfordshire. It has been a rough road for three or four years, but most of the administrative and political problems are well on their way to solution. Only the uncertainties of the international situation threaten the fulfillment here of Ebenezer Howard's dreams of the future.

An Appraisal of the Hydro-Electric Power Commission of Ontario†

By FRED P. MORRISSEY*

THE interest of economists in the Bonneville Power Administration, the Central Valley Project, and the Tennessee Valley Authority makes extremely timely the examination of the hydro-electric utility industry in Ontario, where a government ownership program has been in operation for almost half a century. It is a project quite unique in its origin, financing, rate-making, and autonomy, achieving a degree of stability and public acceptance perhaps unparalleled elsewhere.

Origin, Development and Organization

The public power program in Ontario did not result from the initiative of the Federal or Provincial government as its American counterparts have done. Rather, it was the consequence of the action of certain municipalities to meet general urban power and light demands, an origin reflected today in the dominance of the municipal interest in the electric supply and distribution. At the turn of the twentieth century the municipalities of Ontario desired cheaper sources of power and sought provincial aid in satisfying this desire.¹

† The material upon which this article is based was first presented at the Pacific Coast Economic Association Convention, September 1950.

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¹ The causative factors behind this municipal movement to exploit the potentials of Niagara Falls included: the complete absence of indigenous coal in central Canada; the success of the Niagara Falls Power Company in developing and transmitting Niagara power to Buffalo since 1897; the granting of licenses to private interests to exploit the Canadian portion, and export the power to the industries of Buffalo while ignoring the Canadian demand, scattered as it was; the very concentrated magnitude and strategic location of Niagara Falls only ninety miles from Toronto; and finally, the rising nationalism and nascent industrial development being promoted by the opening of the Canadian west.

The initial legislation of 1903 permitted any group of municipalities to arrange for, collectively or individually, a supply of power from Niagara Falls for municipal distribution; but the more liberal legislation of 1906 provided the basis of the organization as it exists today. This statute, The Power Commission Act, set up a single commission to act on behalf of all interested municipalities to provide facilities for a joint supply of power through a centralized agency, the Hydro-Electric Power Commission of Ontario. The three commissioners are appointed by and are responsible to the provincial government, holding office at the pleasure of the government. One must be an elected member of the Legislature to act as liaison officer with that body. Although the commission has broad powers, its primary function is to supply electricity to the participating municipalities. This results in a separation of functions; the generation, purchase, and transmission of electricity is the concern of the commission, while its distribution is a function of the individual cooperating municipalities, involving the acquisition, or construction of distribution facilities by the municipality.²

² In the rural power districts, distribution is carried on by the commission. In Northern Ontario (with the exception of the Thunder Bay System near the lake-head) the hydro-electric facilities are owned by the Province and operated by the commission at all levels, as Trustee for the Province. Any deficit or profit incurred in the Northern Ontario operations is absorbed by the Province as part of the Provincial policy of developing this area, rich in minerals and lumber yet largely unexploited. The provincial railway, The Ontario Northland, is another aspect of this policy. This paper does not treat the rural electrification program or the Northern Ontario operations in any detail; the government subsidization in rural power alters the principles behind the municipal development and presents a somewhat different policy.

Sources of Supply: Generation and Purchase

The commission today operates fifty-six generating stations with a total capacity of over 2,000,000 horsepower, (hereinafter written HP) the largest being the Queenston plant on the Niagara River, of 550,000 HP. In addition, nearly 1,000,000 HP are purchased on contract from sources outside the province, principally from the private companies in Quebec generating from streams in the Ottawa watershed and from the Beauharnois plant and the Cedar Rapids plant on the St. Lawrence.³ This 2,000,000 HP installed capacity in Ontario represents about thirty percent of the hydraulic potential of Ontario and is second in Canada to Quebec's 6,100,000 HP generating capacity in 1949. These generating units are united in a large-scale, interconnected, and co-ordinated supply, by a transmission system exceeding 10,000 miles in length.

The power supply utilized by the commission for the cooperatively-owned systems, Southern Ontario and Thunder Bay, has been dependent on factors other than favorable geological and hydrological features. While the potential and location of power sites has been very advantageous in Ontario, the inability to reach necessary international and interprovincial agreements has severely restricted the development of the potential of Niagara Falls, the international section of the St. Lawrence, and until recently the Ottawa River.⁴

³ In 1944 the Province of Quebec established the Quebec Hydro-Electric Commission and the commission expropriated the facilities of: (a) the Montreal Light, Heat and Power Consolidated, (b) the Montreal Island Power Company, and (c) the Beauharnois Light, Heat and Power Company. This provided the commission with control of both the Beauharnois plant and the Cedars unit, as well as an extensive distribution system in Montreal and vicinity.

⁴ The geological structure of Ontario has provided excellent power sites. The pre-Cambrian shield of granite rock covers the entire area north and northwest of a line between Kingston on the St. Lawrence, and Port Severn on Georgian Bay. The topography here is rough with many waterfalls,

The initial supplies of power were derived from Niagara Falls for those areas within transmission range. The commission purchased power from the Ontario Power Company and transmitted it over commission lines. In 1917, this generating station was purchased, as was the Toronto Power Company facilities at Niagara in 1922, providing the commission with approximately 300,000 HP generating capacity at Niagara, to be augmented by the 550,000 HP Queenston plant—constructed by the commission and placed in operation in 1922. This installed capacity utilized fully the 36,000 cubic feet per second diversion at Niagara Falls allocated to Canada under the International Treaty of 1909. This restriction, raised somewhat in 1940 for ten years, has seriously limited additional capacity from this source. The requirements of those centers in Eastern Ontario and about Georgian Bay were supplied by local power developments and interconnections forming several minor self-contained power systems in addition to the Niagara Falls and the Thunder Bay systems. These small groups have gradually been combined into a single system, embracing all of Southern Ontario, which is now operated as a single unit, technically and financially.

The limitation on Niagara River diversion, and the lack of agreement regarding the exploitation of the St. Lawrence and Ottawa Rivers, forced the commission to turn to the private power companies in Quebec, and long-term

lakes, and rapids, providing excellent hydraulic sites. The southern limit of this area also has numerous power sites due to the granite and limestone interlacing. In the more populous Southern Ontario, the Niagara Cuesta, a scarp of Silurian limestone, and the Niagara River, provide a maximum head of three-hundred feet and a constant flow of 175,000 cubic feet per second. The International Rapids section of the St. Lawrence River, has a 2,000,000 HP untapped potential, and the Ottawa River affords numerous power sites which have been greatly improved with storage facilities to regulate the flow.

contracts for approximately 900,000 HP were arranged in 1926-30. The repudiation of these agreements by the commission in 1935 was an unfortunate, short-sighted action which the commission has had cause to regret. These contracts were rewritten subsequently with the major change being a reduction in price from \$15.00 to \$12.50 per HP.

The 1930's witnessed little expansion in plant capacity except as a result of purchases. However, the decade of the 1940's has been one of major construction activity by the commission, with five new generating plants on the Ottawa and Madawaska Rivers in Eastern Ontario, expansion of a hydraulic unit at De Cew Falls near St. Catharines, and the construction of steam plant, and several small diesel units. Over 1,500,000 HP is being added to the cooperative municipal capacity together with a substantial increase in transmission and transformer capacity in this post-World War II expansion program. Thus, the early policy of the commission of purchasing existing generating, transmission, and distribution units, has been fully exhausted and the commission must turn to construction of generating equipment, including steam generation, on a large scale.

Services Provided

The basis of many of the major public utility holding companies arose out of the provision of managerial and engineering services to the subsidiaries. The Standard Gas and Electric Company was

so formed in 1910, as was the Engineers Public Service Company, identified with Stone and Webster Incorporated. The Provincial Commission has carried out similar functions for the municipalities from its inception, including the initial estimates of the cost of supplying power. In addition to the responsibility for the supply of power,⁵ the commission provides facilities for technical and supervisory assistance to the municipalities. For the small communities and rural power districts the commission operates the distribution facilities in a direct managerial capacity, and the costs of all such services are directly allocated to the municipalities concerned, as far as practicable.

Financial Aspects

The financial program of the enterprise has several interesting aspects. The capital investment of the commission in power undertakings is \$546,352,576.31,⁶ while the investment of the municipalities in distributing facilities and other assets is \$166,407,669.12, or a total investment in 1948 of \$712,760,245.43.

At the outset, neither the commission nor the municipalities possessed any equity in the enterprise. The municipalities initially financed their distribution facilities by a debenture issue, after the municipal voters had given their approval and a contract had been signed with the commission. The commission financed its early capital expenditures for the construction of transmission and generating facilities by provincial advances; but when an existing plant of private corporations was purchased, the commission either issued its own bonds with a provincial guarantee in payment, or as-

⁵ In one respect the commission did not carry out its coordinating program well. In Southern Ontario, the Niagara Division operates on twenty-five cycles, and the remainder is on sixty cycles. Initial efforts to standardize on sixty-cycles frequency are currently underway, and it is estimated it will require until 1964 to complete. The net costs of this conversion range from \$120,000,000 to \$160,000,000 with the gross cost set at \$191,000,000. Apparently the commission cannot be held accountable for the initial development of the different cycles, merely for the extended delay in not carrying out the frequency standardization program. A reserve of over \$50,000,000 has already been set up to help meet the costs.

⁶ This sum includes approximately \$71,000,000 on behalf of the Northern Ontario System operated by the commission for the Province; excluded here is the sum of \$33,380,778.24 in respect of capital grants by the Province for rural power district facilities.

sumed the bonds of the private company adding the provincial guarantee as well. Since 1935, the provincial advances have been discontinued and this liability reduced to \$68,700,000 as of 1948. All new financing is now done by the commission's own debenture issues.

The commission has outstanding some \$161,000,000 in long-term debt with the public, in addition to the unpaid provincial advances. The Province therefore carries a liability, contingent and actual, of \$230,000,000 on behalf of the commission. The commission pays the same interest rate on Provincial advances that the Province itself is required to pay on the debentures issued to raise these funds. The interest rate on commission debentures is the same as the Provincial issues for similar maturities. Thus, the credit of the commission, the Province, and the municipalities is involved in the financial program. However, the municipalities, as indirect owners of the property held by the commission, bear the ultimate financial responsibility and liability for meeting the commission's financial commitments in addition to their own indebtedness. This municipal liability is clearly defined in the determination of the wholesale price of power for each municipality.

The Determination of Wholesale Price of Power

The price of power sold to each municipality is the cost to the commission of supplying and delivering the power, including the corporation's adjusted proportion of each of the following:⁷

- (a) Expenses of operation, maintenance, and administration of the works of the commission.
- (b) Cost of purchased power.
- (c) Interest on debt and reserve account balances.

- (d) Provision for five reserves:
 - i Sinking Fund.
 - ii Depreciation or renewals.
 - iii Contingency and obsolescence.
 - iv Rate stabilization.
 - v Frequency standardization (where applicable).⁸

The allocation of these expenses is carried out annually in an undisclosed manner, precluding an analysis of one of the most interesting economic problems.

The sinking fund provision requires an annual payment to provide a fund in forty years sufficient for the repayment of all provincial advances and all other indebtedness of the commission incurred on behalf of the municipalities. This amortization of the debt is quite the reverse of private corporations' policy of refunding maturing debt. The accumulated sinking fund, then, becomes a measure of the equity interest of the municipalities in the commission property, amounting to \$93,000,000 in October 1948.⁹ As the outstanding debt is reduced, the interest requirements decrease, resulting in lower cost of power. The municipalities are required to cover their costs on a similar basis and set up a sinking fund for the elimination of their own debts. So effective has this been that, for the 308 municipalities operating their own distribution systems, liabilities amount to only \$12,800,000 or 5.2 percent of their total assets. The municipalities have, therefore, practically complete and clear title to their distribution facilities.

The application of this "service-at-cost" principle has the advantages foreseen by the promoters of the public program, but it also bears the seeds of undesirable political and economic consequences. The major benefit of the principle is that it renders the financial

⁷ The Power Commission Act, Chap. 62, R.S.O. 1937, as amended to May 1949, Section 61.

⁸ See footnote 4.

⁹ If the rural power districts are included, this is a total of \$108,000,000.

results independent of fluctuations in general industrial and commercial activity, if adhered to rigidly. Additionally, it provides prompt and automatic adjustments in the level of wholesale rates, a sharp contrast to the protracted investigations and hearings so common in rate cases in the United States. These two features are very beneficial to the financing of the organization, by ensuring adequate revenues to meet the financial obligations, a result desired by the initiators of the program.

However, the necessity of increasing rates in a severe recession or depression, merely because load conditions have decreased, represents very doubtful economic policy, detrimental to the economic recovery generally. The political shortcomings of this policy at a time of widespread unemployment, and falling prices elsewhere are readily apparent. Nevertheless, close adherence to the "service-at-cost" principle dictates this action, unless very substantial contingency and rate stabilization reserves can be drawn upon to supplement deficient revenues, if rates are not increased. In practice, the control of the commission over the determination of the appropriations to, and withdrawals from, the contingency and rate stabilization reserves, provides a means of avoiding a completely rigid method of cost and wholesale price determination. Otherwise an inflexible method might result in extreme fluctuations in the wholesale price to each municipality in inverse ratio to the load conditions of the system.

The experience of the commission in the 1930's is an example of the danger and difficulties of administering this principle. The supplies of power provided by the Quebec contracts, negotiated in 1926-1930, were not required as they came on the line, and the commission was forced to draw heavily on

the contingency reserve to pay for this unused power.¹⁰ The logical step in view of the "service-at-cost" principle would have been to raise the power rates to the municipalities. The political party in power when these contracts were made was defeated in the provincial elections, and the new government did not think it politically expedient to raise the rates. Instead, the Attorney General declared these contracts illegal and unenforceable, claiming the commission did not have authority to bind the municipalities by such a contract. Later, these contracts were renewed at a lower price. Thus, the commission did not carry the "service-at-cost" policy to finality, if we can assume the contracts were legal, and the experience indicates a possible weakness of the "service-at-cost" principle.

Rate Schedules to Ultimate Consumers

The commission claims that the rate structures of the distributing municipalities have been designed to ensure "service-at-cost" on the ultimate consumer level. "The additional cost to the utility of supplying a large energy consumption as compared to a small energy consumption is relatively small, and therefore, schedules must give expression to this feature by incorporating low follow-up rates . . . thus the fuller utilization of service which is to be desired by the consumer, and the utility, is automatically promoted under service 'at cost' by the form of the rate schedule."¹¹ Yet the simplicity of "Hydro" rates, for domestic and commercial use at least, belies this

¹⁰ In the years 1932-35, the average annual withdrawal from the contingency reserve was \$3,132,478.00. The commission paid over \$8,000,000 for the unused contract power in 1935, and this sum would have increased to \$9,500,000 in 1936, and to almost \$11,000,000 in 1937.

¹¹ F. A. Gaby, "Some Interesting Aspects of the Hydro System," as reported in the *Bulletin of the Hydro-Electric Power Commission of Ontario*, August, September and October 1931. Mr. Gaby was Chief Engineer of the commission for approximately twenty years.

statement, unless it is interpreted as a statement of policy, rather than actual practice. A rate schedule in perfect accordance with the cost of service would be so complicated and unwieldy as to be totally unacceptable to both the utility and its consumers. Nevertheless, the commission has developed and utilized a rate structure¹² designed to exploit the assumed elastic demand for the product and increase the utilization of electricity. This pioneering effort has meant the commission has never been

caught in the impasse of high rates restricting utilization, thereby keeping average costs high. This early conception of the nature of fixed costs and the assumption of an elastic demand have provided a promotional rate structure perhaps unparalleled elsewhere, until the T.V.A. followed the precedent set by the commission. The influence of this policy on cost to the consumer and quantities utilized is indicated in Table I.¹³

TABLE I—AVERAGE CONSUMPTION AND AVERAGE COST OF ELECTRICITY FOR URBAN RESIDENTIAL CONSUMERS IN ONTARIO AND UNITED STATES.

	Residential Ontario		Residential United States		Commercial, Ontario ²	
	Average Cost Per KWH	Average Monthly Consumption	Average Cost Per KWH	Average Monthly Consumption	Average Cost Per KWH	Average Monthly Consumption
1914.....	5.08¢	21 KWH	8.3¢	22.3 KWH	4.00¢	91 KWH
1920.....	2.56	45	7.5	28.2	2.50	140
1930.....	1.61	130	6.55 ⁴	38.2	2.11	338
1940.....	1.25	175	3.84	79.	1.53	533
1945.....	1.07	205	3.41 ¹	103.	1.33	627
1948 ³	1.00	252	3.02 ¹	127.	1.32	673

(1) 1945 and 1948 United States Average is based on 12 month average to September 30, of 1945 and 1948.

(2) Commercial figures for United States include small power consumption and are not strictly comparable with Ontario.

(3) Ontario—1948 Farm Service (all uses) Average cost per KWH—1.63 cents: Average Monthly Consumption—243 KWH. —1948 Hamlet Service, rural Domestic, Average Cost per KWH—1.77 cents: Average Monthly Consumption—192 KWH.

(4) United States figure here is for 1928 rather than 1930.

Appraisal of the Ontario Power Program

The selection of criteria of success or failure for a government enterprise is much more difficult than for a private corporation where the profit motive is dominant. Frequently, the conflicting evidence of social, economic, and political criteria may render any firm conclusion unlikely. The criteria used here are

primarily economic in character, and for this reason, are not altogether adequate. The broader objectives of the Ontario program, where the prime consideration has been the widest extension of service in rural and urban areas alike, renders the financial comparison with private

¹² All rates for municipalities must be approved by the commission to ensure adequate earnings to the municipalities, and to provide for the benefits of the program being passed on to the consumer. In this respect, rate approval by the commission is not unlike the provisions regarding maximum resale price in a T.V.A. contract.

¹³ The use of such a statistical average has serious limitations. A low average cost per KWH may be due solely to a larger use of electricity even though rate schedules are exactly alike. The larger consumption also may be due solely to lack of other substitute fuels, e.g., natural gas, which forces utilization of electricity for cooking, thus enlarging the quantity consumed. Such a situation may not result in any clear advantage to the consumers of the larger quantities of electricity.

companies unsatisfactory, as regards such items as capital charges, overhead, and revenues.

The first criterion, commonly used in public utility comparisons is that of rates, utilization of service, and typical bill studies. The data in Table I verify the high consumption of electricity, and low average cost for urban domestic and commercial consumers in Ontario. A compilation of typical bills for residential¹⁴ consumers in cities over 50,000 indicate that these Ontario consumers enjoy the lowest cost of electricity for similar classifications in North America. In testimony before the Federal Power Commission in May 1939, Professor James C. Bonbright of Columbia University¹⁵ concluded from a typical bill study, that residential bills in Ontario range from thirty-three percent to sixty percent of similar bills in the Niagara-Hudson Power Corporation territory; while typical Ontario bills for industrial power range from fifty-seven percent to ninety-seven percent of the comparable Niagara-Hudson bills. Ontario typical bills for community, rural, and farm service, also were considerably lower than corresponding bills under Niagara-Hudson rate schedules.

It has frequently been claimed that these extremely low rates for domestic consumption have, in effect, been subsidized through tax advantages of the Ontario enterprise and through higher

rates to the industrial consumers. That the tax position of the public program in Ontario has been beneficial, cannot be denied. The commission is required only to pay certain water rentals, and taxes on the land it occupies for municipal and school purposes. Buildings and works are exempt. However, there is no tax exemption applicable to either the provincial or commission debentures. In his study referred to earlier, Professor Bonbright submitted evidence to show that, while the Ontario Commission had a tax advantage, these wide differences in typical bills were not due to the lower taxes paid by the Ontario system.

With regard to the claim of subsidization of domestic consumers by industrial power users, Professor William E. Mosher of Syracuse University concluded: "The comparisons [of typical bills] do indicate, however, that one class of consumers in Ontario, is apparently not subsidizing another class . . . unless a similar situation exists in the cities south of the border (New York State)."¹⁶

It is fair to conclude, that, as far as rates and utilization of service by consumers are adequate criteria, the Ontario project is extremely successful.

The second criterion utilized, that of financial stability, appears to be favorable to the commission as well. The municipalities have a distribution plant practically debt free and, in addition, have accumulated an equity interest in the commission's property equal to approximately forty percent¹⁷ of the outstanding indebtedness of the commission, \$230,000,000. In addition, there is approximately \$50,000,000 in contingency and rate stabilization reserves,

¹⁴ The data required for typical bill studies of large industrial power consumers are not available in the annual reports. In 1948 the commission served 200 industrial consumers throughout the Province through a fixed price contract. Any surplus or deficit from these contracts is turned over to the municipality account. Approximately 1,000,000 HP were supplied in 1948. The revenue from such sales accounted for twenty-five percent of the revenue in Southern Ontario and sixty-six percent in the Thunder Bay system. The details of these contracts are not publicized because the commission argues this disclosure might prejudice the competitive position of the purchaser.

¹⁵ See also, James C. Bonbright, *Public Utilities and the National Power Policies* (New York: Columbia University Press, 1940) p. 20.

¹⁶ William E. Mosher et al., *Electrical Utilities, The Crisis in Public Control* (New York: Harper and Brothers, 1929), p. 267.

¹⁷ This figure would be almost fifty percent if we include the sinking fund provisions of the rural power districts, i.e., \$108,217,000.

which are the equivalent of the segregated surplus of private utility companies. Insofar as the cost of power to the municipalities continues to reflect all the costs of the commission, including the sinking fund provisions, the financial position of the enterprise will continue to improve.

The third standard of judgment is the dependability of the supply of electricity provided. One of the characteristics of a public utility is the necessity of serving all who ask for service. While the extension of service has been extremely rapid in Ontario, the annual reports indicate that the commission has experienced frequent and substantial power shortages even in peace-time. In 1920-21, a deficit in the Niagara system occurred; in 1924 this complaint of a temporary shortage was made by the commissioners; and in 1928 power curtailments were again necessary. These, however, were of a minor nature compared to the deficit of supply in post-World War II when water shortages¹⁸ and insufficient peak capacity seriously handicapped industrial operations and greatly inconvenienced the domestic consumer. Widespread power restrictions, quotas, and cut-offs were instituted throughout the Southern Ontario area. In December 1947, power curtailments reached a maximum of 386,000 HP. In 1948, primary power demands exceeded available resources on practically every working day throughout the year.

These postwar shortages can be attributed to no one factor. The commission has commonly operated with very small reserve capacity, with peak demands continually pressing the available supply. The forecasting of the commission has clearly been inadequate, resulting in the enormous surpluses of the early 30's and the deficits in 1947 and 1948. The ex-

treme drought in Eastern Ontario and Quebec doubtless aggravated an already serious problem. The political bickerings over the division of water sites on the Ottawa River, due to the change in political parties in power in both Ontario and Quebec, further delayed the construction of needed power facilities.¹⁹ By this criterion then, the commission cannot claim to be particularly successful.

A fourth, and final criterion, could be the degree of freedom from political action and intervention. Considerable doubt arises as to the reasonableness of selecting such a standard, for the part the commission plays in the Ontario economy is so vital that one could well expect political intervention at every turn. Whatever the merits of such a criterion, an objective study requires some consideration of the problem. Repeatedly, the commissioners have declared that the Hydro is in no way a department of the government; and, while subject to the ultimate control of the provincial legislature, it exercises almost complete autonomy over its own day-to-day operations. In an address delivered at Princeton University in 1941, Dr. T. H. Hogg, then chairman of the commission, claimed that, "government participation is limited to the degree of supervision of general policies necessary for the protection of the financial guarantees that the Province has placed behind the undertaking . . ." However, due to the importance of the supply of electricity to the Ontario economy, and the fact that the commissioners are appointed and re-

¹⁸ Sixty percent of commission generation (owned and purchased) is from continuous flow streams and forty percent from streams of variable flow.

¹⁹ Legislation was passed dividing the water power sites between Ontario and Quebec in 1943 (Ottawa River Water Power Acts, Chap. 21). The Liberal Party in power when this agreement was made was replaced at the general election that year, and Mr. Drew's Conservative Party, which had been in opposition to the scheme, formed a government. It was only in the fall of 1945 that the Conservative leader agreed to proceed with this plan. In Quebec, the replacement of Mr. Godbout's party by that of Mr. Duplessis, who had also been a severe critic of the agreement, did not help matters.

moved by the political party in power, the opportunity for political capital has been great, and has not been overlooked by the politicians.²⁰ Yet the numerous royal commissions and other special investigations have almost completely exonerated the commission of any involvement to date. Since the death, in 1925, of the first Chairman, Adam Beck, the commissioners' term of office generally has been limited to the term of the political party in power that appointed them. Clearly evident are the inadequacies of control of policies by political debate on matters where technical knowledge is essential, but usually lacking on the part of the public and politicians alike. Political maneuvering of facts, and honest misinterpretation are inevitable, and such risk is even greater where long-range planning for adequate reserves is essential. The democratic process has not proved particularly amenable to the operations of such enterprises as the Ontario Hydro, but honest explanation and public education can

thwart the political shortcomings. Unfortunately, the commission has too frequently chosen to act autocratically to achieve its ends, taking action without legislative approval where it was patently needed, and forcing such approval later.

Despite these shortcomings, the experience of the Ontario system indicates the feasibility of public ownership and operation of an electric utility on a nonsubsidized basis. Its success has been due to many factors: the ability to raise funds cheaply by dual pledge of the credit of the municipalities and the province; the availability of large supplies of hydraulic energy readily exploitable; the adoption of a promotional rate schedule from its inception to encourage the wide spread use of electricity; a centralization of generation, transmission, and purchases of power with all the economies of scale and long-range planning. Yet combined with these factors there is decentralized distribution providing for intimate knowledge of local conditions and a substantial degree of freedom of action. Unlike the provincial experiment in railway operation, the Hydro enterprise proves that government operation is not necessarily or inevitably inefficient.

²⁰ The necessity for repurchase or expropriation of power sites and water leases, e.g., the Ontario Power Service Corporation in Northern Ontario in 1932, the power contracts with Beauharnois interests, the post-war power shortages, and other occasions have provided charges of political bribery, and patronage, and sheer neglect of duty.

The Rollover in Rental Housing

By JULES BACKMAN and ABRAHAM GITLOW*

A MAJOR change occurred in the market for rental housing from 1948 to 1950. The acute shortages with the accompanying "apartment-at-any-price" attitude definitely ended in many sections of the country. The record volume of new housing has been reducing the pressure. The manner in which the market for rental units changed is accurately mirrored in the classified advertisements of many newspapers. A study has been made by the authors of the advertisements appearing in *The New York Times* on the first Sunday of each September and March from September 1945 through September 1950.

The changes portrayed in this study are understandable primarily against the backdrop of changing pressures in the housing market in the New York Metropolitan area. Two observations appear especially relevant: *first*, housing starts have outpaced population growth; and *second*, families that were doubled up have been finding their own accommodations, so that probably fewer families are doubled up today than in 1940.

The New York Metropolitan area has had an increase of only 9% in population over the past decade, as compared with an increase of 11% for the nation as a whole and much larger increases in many other metropolitan areas. Yet more homes were started in the New York Metropolitan area than in any of the other metropolitan areas for which data are available. It ranked fifth in the number of homes started, per 10,000 population, from 1946 to 1949, although ranking seventh on the basis of rate of

change in population growth from 1940 to 1949.¹

A favorable aspect of this situation has been the growing importance of rental housing. The following tabulation shows the data for the New York Metropolitan area:

Year	Total Number of Units	Number of Rental Units	% Rental Type
1946...	56,360	26,620	47
1947...	60,240	26,530	44
1948...	74,320	31,630	43
1949...	102,340	56,900	56

The proportion of rental-type housing construction in the New York-North-eastern New Jersey area reached its highest postwar level in 1949.

This development contributed significantly to an easing of the critical housing shortage. It is reflected in the large number of listings of apartments for rent in the daily press with the level of rents in these offerings declining fairly steadily from the peak offering prices of several years ago. These developments also provide the most effective guarantee to a runaway rise in rents should rent control be eased.

The pressure for higher rents has reflected the excess of demand over supply. The large number of marriages and the sharp increases in income during the war and early postwar periods, while new building was limited in quantity, created great pressure for higher rents. One effect was that doubling up (husband-and-wife subfamilies that remained with primary families) for the country as

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¹ U. S. Bureau of Labor Statistics, *Housing Activity in the Nation and in 15 Metropolitan Areas*, 1950. Statement of Ewan Clague, *Survey of Current Business*, March 1950, pp. 14, 20.

a whole increased about 47% between 1940 and 1947.

Since 1947 new housing has increased in all areas and has brought the probable total of doubled families nationally close to, if not below, the 1940 figure. New housing starts in the New York area have outranked those in most other metropolitan areas in number, although not in relative importance. Marriage licenses also have declined in number in New York City, as they have nationally, from their earlier postwar peak. The evidence on both counts would suggest, therefore, that undoubling has proceeded as rapidly in New York City as in other sections of the country, and that the number of doubled up families currently is no greater (and perhaps less) than it was in 1940.²

The U. S. Department of Commerce, after examining trends in family formation, has concluded that the declining rate of undoubling "... suggests that this source of demand, though substantial, is trending downward ... Assuming some further undoubling during the remainder of 1949, the number of couples still doubled up at the year-end would be about the same as in 1940. *It would be about 5 percent of the total married couples as compared with 6.5 percent in 1940.*"³

Study of Advertisements in the New York Times

The study of classified advertisements appearing in *The New York Times* covered eleven selected dates from 1945 to 1950. These advertisements were for the New York Metropolitan area including the five boroughs of New York City, Westchester and New Jersey. A count was made of the number of advertisements.

²The National Industrial Conference Board, *Economic Almanac for 1950*, p. 21; *Housing Statistics*, Housing and Home Finance Agency, Bureau of the Census, February 1950, p. 2, housing starts; *Survey of Current Business*, March 1950, p. 10.

³U. S. Department of Commerce, *Survey of Current Business*, March 1950, p. 11.

This, in turn, was broken down into the more important categories of advertisements, namely, unfurnished rooms, furnished rooms, apartments wanted, co-operatives, and apartments for exchange. The advertisements offering apartments for rent were examined for the offering price, as well as for the various conditions attached to the offer, or the services offered as an inducement to prospective tenants. Where advertisements carried multiple offerings, each of the offerings was counted separately. However, in connection with new apartments, it is clear that the actual number of apartments available was considerably greater than indicated by a count of advertisements. There was no way in which the number of such apartments which were available could be determined. An illustration of a multiple advertisement (omitting address) on March 5, 1950, is the following: *Rego Park: IMMEDIATE OCCUPANCY 1½ rooms \$78 2 rooms \$85 FREE GAS & ELECTRICITY.*

Table I shows the trends of advertisements for the selected dates during the period covered. The total number of advertisements of all classes increased from 281 on September 2, 1945, to 808 on September 3, 1950. These figures refer only to the number of advertisements, and not to the number of actual apartments covered by these advertisements. As noted in the table, the number of multiple advertisements was 253 on September 3, 1950. Since most of these types of advertisements covered new housing developments, it is clear that the actual number of apartments available was considerably greater than shown in the tabulation of advertisements. The highlights of this overall tabulation are summarized below:

1. The number of advertisements for apartments for rent showed a sharp upward trend from a low of 29 on March 3,

TABLE I—ANALYSIS OF APARTMENT ADVERTISEMENTS, SELECTED DATES, SUNDAY NEW YORK TIMES, SEPTEMBER, 1945-SEPTEMBER, 1950

	9-2-45	3-3-46	9-1-46	3-2-47	9-7-47	3-7-48	9-5-48	3-6-49	9-6-49	3-5-50	9-3-50
Total number—all classes.....	281	491	488	448	661	644	518	790	707	958	808
Apartments for rent.....	65	29	34	87	180	290	285	540	520	756	669
Apartments for sale (cooperatives)....	6	10	6	24	35	33	14	34	19	32	18
Apartments for exchange.....	95	259	189	156	223	135	78	91	49	50	33
Apartments wanted.....	115	188	177	159	209	178	137	124	119	120	88
Apartments for Rent											
Demanding Reference.....	7	5	2	5	5	15	12	20	12	13	13
Demanding Security.....	0	0	0	0	8	13	17	11	20	10	6
Requiring purchase of furniture....	0	4	6	8	18	39	19	41	30	41	0
Offering garage facilities.....	2	0	0	3	13	10	13	27	45	60	76
Offering free utilities.....	3	0	0	0	3	8	11	21	24	45	32
Will decorate or alter.....	0	0	0	0	5	4	2	2	1	6	16
Apartments Wanted											
Will Buy Furniture.....	0	8	9	15	7	14	8	9	11	9	0
Will decorate or repair.....	1	1	3	3	7	7	2	7	7	5	0
Offer to pay brokers' fee.....	12	11	10	8	9	12	4	3	3	2	0
No children, adults, no pets, etc....	15	18	21	13	15	15	11	3	7	5	3
Multiple advertisements.....	23	18	9	24	44	80	84	151	199	212	253

1946 to 669 on September 3, 1950. During the same period the number of multiple advertisements increased from 18 to 253. The number of unfurnished apartments (including multiple) rose from 25 to 690, while the number of furnished apartments advertised increased from 22 to 313. About five-sixths of the increase in advertisements for furnished apartments took place in Manhattan. This sharp increase in the number of advertisements provides a good indication of a significant shift in the housing market pointing toward an alleviation of the housing shortage in the New York Metropolitan area. It must be emphasized that this alleviation did not mean a large number of apartments available at low prices. As noted later, however, the prices at which apartments were offered decreased markedly during this period.

The total number of advertisements declined from 958 on March 5th to 808 on September 3, 1950. This was due to a decline in each component type of advertisement. This change does not invalidate the analysis for two reasons: (1) a similar decline occurred in 1948

and 1949 without altering the underlying trend; and (2) the decline in number of advertisements of apartments for rent, from 756 to 669, obscures the fundamentally important fact that the actual number of apartments for rent increased from 952 (March 5, 1950) to 1,003 (September 3, 1950). This is a result of the increase in the number of multiple advertisements from 212 (March 5, 1950) to 253 (September 3, 1950).

2. The availability of apartments for sale (cooperatives) also reflects the shortage situation. Such advertisements reveal a moderate decrease from the post-war peak (35 in September 1947 to 18 in September 1950). They have experienced an even sharper decline in relative importance. In the early post-war years the cooperative appears to have served as an avenue through which builders or owners of existing housing could obtain a relatively quick profit by virtue of selling old and new apartment units to desperate would-be householders. Clearly, the cost of such cooperatives represents a price factor not ordinarily reflected in the price of housing space. It became a device for circumventing

the limits on increases in income as a result of tight rent control.

3. Apartments for exchange reached their peak, absolutely and relatively, in March 1946, when they accounted for 259 of a total of 491 advertisements of all classes. By September 1950, the number had declined to 33. As the critical shortage eased, it became possible to obtain apartments without going through the cumbersome procedure of making an exchange.

An analysis of the advertisements offering apartments for exchange reveals an interesting relationship between two shortage markets: housing and automobiles.

No. of Advertisements Offering:
Apartments Automobiles
for for
Automobiles Apartments

March 3, 1946..	5
Sept. 1, 1946.. 37	45
March 2, 1947..	22
Sept. 7, 1947..	14
March 7, 1948..	8
Sept. 5, 1948..	4
March 6, 1949..	1

On September 1, 1946, there were 37 advertisements offering apartments in exchange for automobiles, and 45 advertisements in which automobiles were offered in exchange for apartments. By 1947, advertisements offering apartments for automobiles had disappeared, reflecting the greater ease of obtaining automobiles. However, advertisements offering automobiles for apartments continued to appear, in diminishing numbers, until March 1949.

4. Advertisements for apartments wanted have declined sharply from the peak level of 209 on September 7, 1947 to only 88 in September 1950. This trend also reflects the reduction in urgency of

demand as the housing shortage has been alleviated. Recent advertisements also are more business-like in tone and contrast sharply with the earlier note of desperation. However, it would be an error to believe that people seeking apartments today are blithe, carefree individuals, certain of finding suitable accommodations within their means. Such an impression is not intended. It is evident, however, that the keen edge of desperation in the ranks of apartment hunters has been blunted.

5. The data evidences the "roll-over" in the housing market in yet another way. In a tight market, landlords demand references, security, and tenant purchase of furniture. Advertisements offering apartments for rent and for sale were culled for such demands. Although the absolute number of advertisements setting forth these requirements was still approximately as high in March 1950 as earlier, they were of much less relative significance. By September 1950, however, the requirement that furniture be purchased had virtually disappeared. Accompanying landlord determination to obtain references, security, etc., is a refusal to make any expenditures that can be avoided. Thus, when the housing market is in critically short supply, building operators are not concerned with garaging tenants' cars, offering free gas and electricity, decorating or repair, payment of brokers' fees, rent concessions, and the expense of moving. This lack of concern is evidenced in the table by the almost complete absence of advertisements offering any such extras in the early postwar years. However, since September 1947, a marked increase may be noted in the number of advertisements offering garage facilities (usually at a special price) and free utilities.

No. of Advertisements With:
Garage Free Gas
Facilities and Electricity

March 2, 1947.....	3.....	0
Sept. 7, 1947.....	13.....	3
March 7, 1948.....	10.....	8
Sept. 5, 1948.....	13.....	11
March 6, 1949.....	27.....	21
Sept. 4, 1949.....	45.....	24
March 5, 1950.....	60.....	45
Sept. 3, 1950.....	76.....	32

We also find a few advertisements stating landlord willingness to decorate, to offer rent concessions and to pay brokerage fees. While not yet significant,

these inducements seem like a portent of things to come.

The foregoing changes are those that might be expected in light of the sharp increase in the number of housing units and the accompanying reduction in doubling up which was discussed earlier.

Decreases in Rent Brackets (Unfurnished Apartments). The large increase in number of units advertised has been accompanied by significant reductions in the rent brackets in which apartments are available. Table II shows the frequency distribution of the trend of

TABLE II—UNFURNISHED APARTMENTS ADVERTISED IN SELECTED SUNDAY ISSUES OF NEW YORK TIMES SEPTEMBER 1945-SEPTEMBER 1950

Rent Interval	Number of Apartments On:									
	9-2-45	3-3-46	9-1-46	3-2-47	9-7-47	3-7-48	9-5-48	3-6-49	9-4-49	3-5-50
Under \$60.....	1	4		4	13	6	2	8	4	6
\$60-\$69.....	2		2		3	1	2	3	2	9
70-79.....	4			1	5	1	3	8	7	28
80-89.....	1			1	4	8	4	17	22	37
90-99.....	1			1	4	6	6	18	33	66
100-109.....	3	1		2	9	9	13	20	33	55
110-119.....				1	2	4	17	27	34	49
120-129.....	1		2	4	11	15	25	31	42	44
130-139.....					3	6	3	15	21	20
140-149.....					2	6	6	10	9	10
150 and over.....	15	6	11	16	48	58	58	133	114	109
No Price.....	16	14	26	55	72	84	80	159	155	193
TOTAL.....	44	25	41	85	176	204	219	449	476	626
(Professional unfurnished included in above.).....	0	5	19	36	42	42	33	91	66	75

offering prices contained in the advertisements for unfurnished apartments. This table is not strictly comparable to Table 1. For the purpose of this table, each offering was counted separately. Thus, the Rego Park offering cited earlier would be shown in this tabulation as two apartments available; one at \$78 and one at \$85, while in Table I it is shown as one advertisement. This tabulation, therefore, makes a modest allowance for the multiple advertisements by including the offering prices for all of the apartments separately listed.

The sharp shift in rent brackets at which unfurnished apartments were

available is striking. On March 3, 1946, when only 25 apartments were advertised, no price was shown in 14 of the advertisements. For the remaining 11, six were offered at rents of \$150 or more per month. Through each of the succeeding periods, as the number of apartments available increased, a slow but steady decrease in rent brackets becomes evident. By September 3, 1950, the contrast with four years earlier is very sharp. Out of the 690 apartments which were advertised, no rent was indicated in 171 advertisements. The reduction in advertisements showing no rent is also significant evidence of the changing

situation. The remaining 519 apartments were distributed as follows: \$150 and over, 160, \$100 to \$149, 192, under \$100, 167, total 519.

Approximately one apartment out of every four advertised early in September 1950 was available at less than \$100 per month; for those with rents quoted, the ratio was about one out of three. It must be recognized, of course, that monthly rents of \$80 to \$100 are still high for the average wage earner with weekly earnings of \$50 to \$60. Nevertheless, the shift from the extreme shortages of the early postwar years, with the accompanying high bonus payments to obtain apartments, has been marked.

This shift toward apartments available at moderately lower rental brackets occurred in each of the New York City areas. In terms of numbers, the improvement was greatest in Manhattan, Queens and Long Island, and other suburban areas. More than half of the apartments shown for less than \$100 a month were in Queens and Long Island. The marked change in Queens and other suburban areas reflected the building boom, with the accompanying increases in the supply of rental units which developed in early 1948, and has since continued unabated. This development followed and reflected in part the enactment of the Housing and Rent Act approved June 30, 1947. In this Act Congress declared its intention of terminating all federal restriction on rents at the earliest practicable date; but it recognized that a housing emergency existed which required the continuation of certain restrictions on rents for a limited time.

Among the major changes made in federal rent control by the Act of 1947, were the following:

(1) The act permitted increases in current maximum rents of not more

than 15 percent if the landlord and tenant agreed "voluntarily and in good faith" to such an increase and the landlord gave a written lease extending to December 31, 1948. Where such leases were made, the units were automatically decontrolled after December 31, 1947, although the lease, unless voided, operated as an instrument of rent control until the end of 1948.

(2) *It decontrolled, as of the effective date of the act, (a) all hotel and motor courts; (b) all apartment hotels which provided customary hotel services; (c) tourist homes serving transient guests exclusively; (d) all housing completed after February 1, 1947, created either by new construction or the conversion of existing dwellings; and (e) all housing accommodations which were not rented during the 2-year period, February 1, 1945 to January 31, 1947.*

The Sharkey laws, aimed at providing tighter rent control in New York City than that of the federal law, did not interfere with the new building boom noted. These laws, authored by City Council vice-chairman Joseph T. Sharkey, were three in number, and became effective as of September 17, 1947.⁴ The laws extended the City Rent Commission's control from hotels and rooming houses to include an estimated 1,800,000 units in nearly every type of rented building. *However, they excluded units in new buildings completed after February 1, 1947, as well as transient accommodations in hotels and rooming houses.* The laws required landlords to obtain permissive certificates from the City Rent Commission before starting eviction proceedings on any grounds other than non-payment of the legal rent. They provided penalties up to 90 days in jail and \$500 fines for violations. Originally due

⁴ *The New York Times*, September 18, 1947, pp. 1, 36.

to expire on September 30, 1948, they were later extended.⁵

Rent Supplements. An interesting manifestation of the shift in the housing market is found in the conditions or inducements included in the various advertisements. Prior to the latter part of 1949 there was considerable evidence of the many ways in which the cost of housing was increased despite rent control. Some of the more important were:

1. Large cash payments to obtain apartments (often took the form of bribery).
2. Payments above rent ceilings.
3. Required purchase of furniture at highly inflated prices.
4. Tenant paying for own decorating.
5. Payment of brokerage fees by tenants.

These factors added to the tenant's cost of housing.⁶ In a free market, they would have been unnecessary. In a controlled market, they became hidden forms of price increase which reflected the enormous pressure of demand upon the limited supply of housing space. They created prices high enough to allocate such scarce housing space as became available⁷ among competing tenants.

As the shortage has been alleviated, significant changes have begun to appear in the New York Metropolitan area. The practices listed above have been steadily reduced in relative importance. In their place there is emerging a variety of actions which tend to lower the effective cost of housing below the levels recently prevailing. Thus, the advertisements in March 1950 were indicating the following type of concession from the quoted price.

1. Free gas and electricity.
2. Garage facilities offered below prevailing market rates.
3. Payment of brokerage fees by landlord.
4. Decoration or alteration by landlord.
5. Rents below ceilings permitted by FHA on new houses.
6. Rent concession (move in now, pay rent from first of next month.)⁸

At the time of our study, these tendencies were not yet widespread. But they had appeared and were growing in importance. One new building even offered to pay the cost of moving new tenants from within a radius of 25 miles. It must also be recognized that the types of concessions noted largely represent offsets to overpriced space in new housing units. Nevertheless, they show that, under such circumstances, the effective price will have to be reduced.

Furnished Apartments. The trends for furnished apartments were similar to those found for unfurnished apartments. As compared with 22 furnished apartments offered for rental on March 3, 1946, there were 313 offered on September 3, 1950. Of this increase of 291 offerings, 192 were in Manhattan. The larger increase in this area reflected the fact that there are many apartment hotels in that borough, and hence many more such apartments for rent. Once again, it is clear that furnished apartments have become available at lower rents as the housing shortage has eased.

The reliability of newspaper advertisements, as an indication of changes in the actual supply of housing units, is indicated by an interesting seasonal area pattern which emerges for furnished apartments. Changes in Long Island, Queens and Manhattan, appear to complement each other seasonally. Thus, the former area reveals a peak number of advertisements in September and a low

⁵ *The New York Times*, July 1, 1949, p. 25. For legal difficulties encountered by the Sharkey laws, see *The New York Times*, March 16, 1949, p. 29, and October 12, 1949, p. 31.

⁶ They were also accompanied by sharp deterioration in service in many instances.

⁷ Some space, of course, was not placed on the market but was made available only to relatives or close friends of the landlord—presumably at ceiling rents.

⁸ There were six such advertisements on March 3, 1950.

number in March, while the Manhattan area reveals a low number of advertisements in September and a peak number in March. This may be expected, for many people move from Manhattan to the Long Island area for the summer months, returning to Manhattan for the other seasons. Consequently, there is a peak demand for Long Island apartments during Spring, with a low

number of advertisements in that area. Simultaneously, there is a lower relative demand for Manhattan apartments during Spring, with a peak number of advertisements in that area. The situation is, of course, reversed in September. This seasonal cycle operates within a generally rising trend in number of apartments in both areas, as revealed in the following tabulation.

TABLE III—FURNISHED APARTMENTS ADVERTISED IN NEW YORK TIMES: QUEENS-LONG ISLAND AND MANHATTAN: SEPTEMBER 1947-SEPTEMBER 1950

AREA	Basic Number of Apartments As Of:						
	9-7-47	3-7-48	9-5-48	3-5-49	9-4-49	3-5-50	9-3-50
Queens-Long Island.....	21	19	48	22	87	21	65
Manhattan.....	49	135	95	220	181	268	206

Summary and Conclusions

Under the impact of a record volume of new building, the housing shortage was alleviated significantly by 1950. This is in line with the traditional method of overcoming shortages. While the supply of housing is still inadequate, the term "shortage" does not have the type of connotation that it had several years ago. Today there is quibbling as to whether the "shortage" may be considered over until prewar vacancy ratios are reestablished. Many who discuss the "shortage" ignore the vital shift in their own interpretation of the term. Thus, in the course of Senate hearings, Tighe E. Woods, Housing Expediter, is reported to have said that the claim that the large volume of new construction has provided an adequate supply of vacant housing was "not borne out by the facts."⁹ He added that overall vacancy rates were "generally between 1 and 2 percent as compared with normal rates of 5 to 6

percent." On the other hand, a U. S. Department of Commerce study noted:

"According to the Census of Housing taken in April 1947, the national total of just over 1 million unoccupied, habitable, nonseasonal dwelling units was 2.5 percent of the total of all dwelling units. It would take a million additional units to restore this vacancy ratio to a more normal 5 percent. It is conceivable that sometime in the next few years the vacancy ratio may go above 5 percent, but if so the excess could hardly be described as necessary to meet a backlog of deferred demand.

"Unfortunately, there is no comparable data on vacancies subsequent to April 1947. With a declining rate of increase in households, while the volume of residential construction held up well, the presumption is that the demand arising from this source is at least no larger than it was in 1947."¹⁰

The following recommendations appear founded in the facts revealed by the analysis.

1. The substantial increase in the availability of higher rent apartments (\$150 and over per month) makes it

⁹ *The New York Times*, April 25, 1950.

¹⁰ U. S. Department of Commerce, *Survey of Current Business*, March 1950, p. 12.

feasible to decontrol such units without danger of any serious hardship.¹¹

2. Adoption of a general decontrol policy, which would gradually remove controls by working from the top rental brackets down. Such a policy could be geared to vacancy ratios, recognizing that prewar vacancy ratios do not present a necessary norm. The importance of vacancy ratios in this respect would be the check on housing price rises which they represent. In this respect, a vacancy ratio of 2 percent represents as good a check as one of 5 or 6 percent.

¹¹ Jules Backman, "A Technique for Decontrolling Rents," *The Commercial and Financial Chronicle*, July 6, 1950.

As a matter of fact, 5 or 6 percent vacancy ratios might well involve considerable downward pressure on housing prices.

When an economic situation has prevailed for several years, there is often a significant lag before people discover that a change has taken place. Such a lag appears to have developed in connection with housing. A recognition of the marked change which has taken place in the housing situation has important policy implications in connection with rent control. Plainly, it is necessary to reconsider basic policy. Such reconsideration would have to be made within the framework of the pressures emerging with the Korean conflict.

I—Welfare Theory, Technological Change and Public Utility Investment[†]

By YALE BROZEN*

A SUCCESSFUL completion of the Atomic Energy Commission's program of research on nuclear reactors would have important effects on the power and transportation industry. At present the commission plans to spend in excess of \$100,000,000 a year for the development of economic methods of using atomic energy to generate electricity, propel naval vessels, and power aircraft.¹ If this program, and others, such as the coal-fired, gas-turbine research program of the Locomotive Development Committee,² can be expected to bring about technological advances which are efficient under future resource and demand patterns, then regulatory commissions and utilities must adjust their regulatory and investment policies for such eventualities.

The problem of adaptation to new developments resolves itself into two questions. The first is that of determining a proper rate policy³ and an investment policy for the interim preceding the appearance of new devices. The second is that of determining a rate and invest-

ment policy appropriate to the circumstances after their appearance.

Policy Criteria

A question implicit in the foregoing is, "What is the meaning of 'proper' and 'appropriate'?" Is, or should it be, the purpose of regulatory policy to yield a fair return to investors, to maximize the benefits of present consumers, or to guarantee adequate supplies of services to future generations? The analysis of the problem will, in this paper, be in terms of what must be done to minimize waste, the appropriate frame of reference for economists.

Waste will be measured in terms of the wants and desires of consumers as expressed through the market. Waste occurs when consumers prefer other things that could be produced instead of the services they are receiving. Whether they want other things more will be determined by comparing the prices they willingly offer for the other items with the price they pay for the services in question.⁴ In making the latter statement, it is assumed that each consumer is free to purchase any desired quantity at the prevailing price.

Implications of the Waste Concept

Ethical implications are present in this definition of waste which may be unacceptable to some. An ethic-free definition could be framed in terms of the important uses left unfilled while devoting resources to unimportant uses. This, however, provides no method of judging

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¹ The Atomic Energy Commission devoted \$54,000,000 to reactor development in the fiscal year, 1948, and \$61,000,000 in the fiscal year, 1949. The budget for the fiscal year 1950 is \$120,000,000 for the reactor program. "Cost of the Reactor Program," Bulletin of the Atomic Scientists, March 1949, p. 94.

² For a description of this program and its prospects, see C. K. Steins, "Some of the Problems Involved in the Coal Burning Gas Turbine Locomotive," *Proceedings of the Midwest Power Conference*, XI, 1949, pp. 360-5.

³ The determination of a rate policy not only involves setting a price for a given quality of service but also involves a decision as to the proper quality of service to be required. This requires the application of the economics of product design. By assuming the decision as to quality of service is already made, this paper will abstract from this problem.

⁴ A. P. Lerner, *The Economics of Control* (New York: Macmillan, 1944), pp. 57-71.

importance and makes it impossible to draw policy conclusions for any specific case.

Application of the concept of waste as above defined would carry beyond the boundaries outlined by the "weak welfare principle."⁵ There are reorganizations which would result in gains for some people with no increase in the resources assigned to producing for them but also in harm to others. An example would be rearrangement of resource services used to produce electricity in a way such that users get more power with no increase in total cost (no increase in resources used) with the consequence that the demand for coal, let us say, is reduced. As a result, the owners of coal mines and of other resources specialized to the coal mining industry find their income reduced.

Since there are many who argue that a reorganization should be instituted only when it is framed in terms such that it benefits some and harms no one,⁶ policy suggestions will be restricted to those acceptable in this view. This does not mean, however, that persons who have made mistakes must be tenderly regarded and preserved from the consequences of their folly. For reasons similar to those outlined by Stigler for not compensating thieves for remaining inactive,⁷ the initiation of a policy which will hurt investors

who have placed their capital in items or skills made obsolescent or obsolete should not be slowed or halted because of the harm to them.

This point is important in any discussion of innovations because the owners of specialized capital are peculiarly vulnerable to technological change. Capital is embodied in production equipment and in human skills,⁸ most of which are fairly specific to the purposes for which they are intended. The value of special purpose equipment and skills is dependent upon the value of the services produced in the specialized operation. If those services become less valuable, then the equipment or skills producing those services become less valuable. A capital loss is the result.

Inventions have a strong effect upon the value of such special services. They may make services more valuable by creating new uses for them. More likely is the prospect that they will make services less valuable by creating means of producing them more cheaply or by replacing them. It is in this role that technological change has been severely castigated for causing great "waste" of the available quantity of capital through "unnecessary" obsolescence. Innovations often decrease the (subjective) quantity of capital by reducing the valuations of existing equipment.

The capital in an item, as a quantity, may be determined from two different standpoints: (1) what has been put in and (2) what is present at any moment. The latter quantity depends upon the market estimate of the future income stream and the discount rate. The important question relating to technological change is the contrast between what has been put in and what is present at any

⁵ For a discussion of contrasts between what is here called the weak welfare principle and other versions of the welfare principle, see Y. Brozen, *Textbook for Economics* (Dubuque: Wm. C. Brown Co., 1948), pp. 215-20. Essentially, the different versions may be reduced to: (1) reorganizations should be undertaken which will benefit some and harm no one, (2) reorganizations should be undertaken in which the benefit to some is great enough that they could be taxed by an amount sufficient to compensate those who are harmed for all damage done and still leave net benefits for those taxed, and (3) reorganizations should be undertaken in which the benefit to some is greater than loss to others although no possible method of taxation and compensation would leave anyone with a net benefit. Version one is what is called here the "weak welfare principle."

⁶ M. Reder, *Studies in the Theory of Welfare Economics* (New York: Columbia U. Press, 1947), pp. 94-100.

⁷ "The New Welfare Economics," *American Economic Review*, 1943, pp. 355-9.

⁸ Human skills are produced by investment in education and may be thought of as capital although they are not easily alienated from their owners as are capital goods.

moment. If a technical change affecting a particular group of capital goods occurs causing *unforeseen* obsolescence, the amount of capital as determined by method (2) will decrease and become less than the amount determined by method (1).

With perfect foresight, points of view (1) and (2) are identical. No more is put into any line of investment than can be realized by the sale of the investment. No investment will sell for more than the value present discounted future revenues at the moment of sale. Only if there is a miscalculation of the value that will be present does overinvestment occur. Such a miscalculation could be due only to imperfect foresight, e.g., a failure to anticipate changes which, when they appear, reduce the value of the services of the durable goods in question.

The overinvestment that takes place as a result of imperfect foresight is a mistake in the sense that part of the investment could have earned greater returns if it had been put into other uses. Because of an invention, or other circumstances, the returns in the particular use to which the investment was put are reduced to below the expected level. The consequent recapitalization reduces the value of the instruments to less than the amount put in.

Does it follow, therefore, that the unforeseen invention caused the waste of capital—that it would have been better not to have made the invention? From the viewpoint of the owners of the capital goods whose value deteriorates as a result of obsolescence, the invention is definitely harmful. It is not objectionable, however, from the viewpoint of the economy. The error of the owners is responsible for the waste, not the occurrence of the invention.⁹ The failure to

anticipate the future correctly led to improper allocation of investment; as soon as capital was committed to such an improper allocation, the waste occurred although it did not become apparent until the unanticipated technical change actually occurred.

This is not to say that the owners did not exercise the best possible judgment under the circumstances. They made an error only in the sense that a better decision could have been made if more information had been at hand, not in the sense that better judgment could have been exercised. An important part of any program for increasing the net benefits to be derived from inventions (by decreasing losses due to errors of this variety) would be to make better information available.

It might still be argued that if the invention were not permitted to come into use until plans were readjusted, no loss to investors would occur and, therefore, that it is the appearance of the invention that has caused the loss.¹⁰ Two answers may be made. If the invention is not permitted to come into use, the loss is greater to the society than if immediate use is permitted. The application of the invention will yield enough increase in income to leave a net gain for some after they are taxed to compensate those suffering losses.

¹⁰ The discussion should not be mistaken as implying that there is never any ground for slowing a research program because of consideration for sunk capital. Where there are large amounts of sunk capital in comparatively new equipment and the end product of a program is likely to be equipment whose product can be produced at an average cost below that of old-type equipment, but in excess of the average variable cost of old-type apparatus, the market for the new equipment may be too small in the near future to compensate for the large cost of bringing the program to fruition quickly. The capital might be better invested in other uses, temporarily. It can be recovered and put into the completion of the program at a somewhat later date when a larger market is ready for new equipment. In this way, the tying up of large amounts of capital in designs that are little used until long after they are produced can be avoided and social returns increased. Considerations such as these should be applied to the timing of investment in such programs as atomic energy research.

⁹ A. C. Pigou, *Economics of Welfare* (4th ed., London: Macmillan, 1932), p. 189.

The second argument against delaying the innovation is also an argument against compensation. Investors should be responsible for their own decisions, including those which result in losses. It is these very losses which are the incentive for making wise decisions. Preventing or offsetting these losses would result in careless allocation of capital. When more efficient methods are available, the old should be scrapped and replaced with the new despite losses to individual investors who have made wrong decisions because of imperfect foresight. Slowing the introduction of efficient methods to prevent private losses to owners of specialized capital results in a deleterious effect on incentives and greater losses to others.

Inasmuch as investors could have acted in ways which would have avoided losses from obsolescence, they cannot expect to be saved from the consequences of their "misconduct," particularly if they wish to retain the right to direct their own behavior. There are cases where investors have exercised the best of judgment and their activity would not be called an error in the light of what anyone exercising this best judgment would have done in the same situation. However, there is no way of distinguishing these cases from those in which "errors" were committed without actually becoming a maker of decisions in the same circumstances. In that case, investors cannot justify their social usefulness or their right to make decisions if some judging body always has to do the same work, although it may be at a later time. In addition, compensating investors for these "errorless errors" would remove the basis for the selection and motivation of the men who do much to reduce the losses to the society from uncertainty. Entrepreneurs (and speculators) specialize in making decisions and taking risks. They reduce the losses from

uncertainty since they are able to predict the future more certainly than the non-specialists in this function. At least those who survive and carry on entrepreneurial activities can and do, for otherwise they would soon fail in their occupation. Their success depends on superior ability to predict the future and to shape economic activities into conformity with their predictions.

In restricting action on the elimination of waste to those cases which can be made to fit the weak welfare principle and its distributive implication, reorganizations will not be precluded which bring "apparent" harm to some. Where the harm was actually caused by folly, by mistakes, or by failure to observe the "rules of the game," i.e., where a participant in the game has no right under the rules to expect protection from such events as innovations or imprisonment,¹¹ then the loss of income which results when these events occur should not be blamed on the events but on the actions which put the participant in a position to suffer from the occurrences. When a pedestrian runs in front of an automobile without regard for the danger into which he is thrusting himself and is injured, we blame him, not the motorist.¹²

Another Implication of the Waste Concept

Another implication of our definition of waste is that only the wants of present consumers for present items matter. No attempt is made to compare the wants of

¹¹ See footnote 7.

¹² The argument offered for gradual reduction of tariffs rather than an all-at-once reduction cannot be used to justify a gradual introduction of a new technique rather than a rapid application. In the former case, tariffs were made a part of the "rules of the game" by legislative act. If a tariff is a settled social policy (its enactment into law makes it such), investors under its protection have a right to expect no loss from a reduction in the tariff unless they have been warned that it was to be reduced, if we apply the Platonic conception of justice. Protection from innovation is not a settled social policy and investors have no basis for a justified expectation of protection from such an event. They must make their investments in such a way as to avoid loss or suffer the consequences of their errors.

consumers (whether present or future) for future services with wants for present services. This is done for two reasons. The first is inherent in the fact that all choices are made in terms of present alternatives. Choices are not made between the present satisfaction of a want or a future satisfaction. Choices are made between the present satisfaction of a want or a present right to future satisfaction. The present right must carry a present satisfaction, of some kind, to compete with other present satisfactions. The satisfaction may consist of the present joy of contemplating the relative certainty that a future service will be available if a present right is secured.

Whatever satisfaction a right to future income carries, strict logic calls for comparisons only in terms of like units. Future satisfaction is not measured in the same units as present satisfaction. Therefore we can only compare the present satisfaction yielded by a right to a future satisfaction—which will be called security satisfaction to distinguish it from what will be called transient satisfaction—with other present satisfactions.

The second reason for comparing only the present satisfactions of today's consumers flows from the first. Since greater certainty of a future satisfaction can be secured in the present by investment, it may be left to the capital markets to furnish the basis for decisions by managers of capital as to whether to produce more transient satisfactions or more security satisfactions. If present consumers desire more security satisfactions, they will offer less of their income for transient ones and will save more. The offer of more loanable funds will lead managers of capital to maintain a greater investment than otherwise and thus to produce more security satisfactions, assuming prices and interest rates are sufficiently flexible and that they are

determined in types of markets such that they serve as an adaptive mechanism.¹³

Any judgment as to present consumers' satisfactions as against future consumers' satisfactions, in our measurement of waste, is made by present consumers in their choices between security and transient satisfactions (saving and consumption) and by managers of capital items in their choices as to whether to recapture now or later capital embodied in a particular form. A given rate of *aggregate* flow of transient satisfactions cannot be regarded as wasteful unless consumers prefer security satisfactions that could be produced in place of the transient satisfactions they are receiving, or vice versa. Given rates of *particular* flows of transient and security satisfactions cannot be regarded as wasteful unless either of these satisfactions could be increased without diminishing the other by reassigning items of equipment producing particular transient satisfactions to producing security satisfactions and other items producing security satisfactions to producing transient satisfactions. It might be mentioned that *one* method of producing a security satisfaction instead of a transient satisfaction is to slow the rate of operation of a given piece of equipment, if it is exhaustible, in order to leave more of its services for the future.

The wants of future consumers enter into the calculation of waste only through the fact that the production of some varieties of security satisfaction—an equity in an electric generator, for example—may yield less security satisfaction than the production of other varieties if the flow of services made available in the future is of a type that future

¹³ The issues and relationships involved are thoroughly analyzed by F. H. Knight, "Professor Fisher's Interest Theory: A Case in Point," *Journal of Political Economy*, April, 1931, pp. 176-212.

consumers do not desire. In that case they will give nothing in exchange for those services and those who choose to invest in such security satisfactions at an earlier date will find that the security purchased is illusory. A choice of present security satisfactions, then, must take into account the desires of future consumers, since items that will give maximum present security¹⁴ are those whose product will have maximum desirability to future consumers.

The Design of Utility Rate Schedules to Fit the Weak Welfare Principle

Regulated utility rate schedules should allow a sufficient return to attract the proper amount of capital without necessitating a tax on those who do not benefit from the services for the purpose of subsidizing the utility. In terms of what can be justified by the weak welfare principle, any changes in the regulation of utilities designed to improve resource allocation should not result in a tax on anyone or an increase in charges to any consumer greater than the benefit from the changes. It is the plea of such men as Abba Lerner¹⁵ that an intersection of marginal cost and demand below the average cost curve should lead to a rate below average cost. The weak welfare principle is not a sufficient argument for such pricing. Other forms of pricing can

accomplish the same objective of giving marginal rates of consumers' substitution equal to marginal rates of producers' substitution. Also, such pricing causes a redistribution of income. Sacrifices would be imposed on some people for the benefit of others—sacrifices either by investors in the utility or by taxpayers called upon to subsidize the utility.¹⁶ All that can be justified by welfare principles or by our definition of waste is marginal cost pricing at the margin of each user's use.

Although the weak welfare principle cannot be used to justify a rate below average cost, it does not preclude the use of such a rate if it can be justified on the grounds of an ethical principle which is an acceptable basis for decisions concerning the division of income. The usually accepted principles do not, however, lead to such a decision. Using the equalitarian principle, there is no reason to assume that all members of the group which consumes the services of a utility are poorer than all members of the group which invested in the utility or than all members of the group whose taxes would be increased to subsidize below-average-cost rates. Nor is there any reason to assume a utility's customers are all more worthy than its investors or the taxpayers who would subsidize it—unless, of course, the utility sells all its services in a rural area or sells them only to members of trade unions.¹⁷

¹⁴ We have simplified the discussion of the effect of future consumers' wants on present allocation of resources by assuming that security is the motive for saving (or not dis-saving). Knight has pointed out that "people desire wealth for many reasons, of which the guaranty of the future delivery of groceries or other consumable services is sometimes the main and sometimes a quite minor consideration. It is desired for the same reasons a head-hunting hero desires a goodly collection of skulls; it is power, a source of prestige, a counter in the game, an article of fashion, and perhaps a mere something to be 'collected.' It is wanted to use, but also just to have, to get more, in order to get still more. Many of the other bases of the desire to own wealth have some connection with the fact that it yields 'income' in one sort or another . . ." *op. cit.*, n. 3, p. 177. These additional motives do not, however, change the conclusions drawn above.

¹⁵ "Statics and Dynamics in Socialist Economics," *Economic Journal*, June 1937.

¹⁶ It is the contention of R. H. Coase that such pricing not only is not justified by the weak welfare principle, but also that it leads to a misallocation of resources and is contrary to it in cases where the increment of cost incurred in supplying the consumer is greater than the marginal cost of the service multiplied by the number of units he consumes (as in the case of installation costs associated with supplying the consumer in question). See his "Marginal Cost Controversy," *Economica*, N.S. XIII (August 1946). A. M. Henderson argues that the required "taxes themselves cause a maldistribution of resources." "The Pricing of Public Utility Undertakings," *The Manchester School*, September 1947, p. 228.

¹⁷ A. M. Henderson suggests that "subsidized public utilities in depressed or isolated areas might properly be used as a means of equalizing income in different parts of a country," *ibid.*, p. 231.

Even if a below-average-cost rate were justified on distributive grounds, marginal cost below average cost is unlikely to endure long if such a rate were charged. Although the rate may be imposed on an already existing plant, the exhaustibility of capital items will lead to the arrival of a time when replacement decisions must be made. C. E. Troxel has shown that, that, "as long as considerable freedom to invest exists, this form of price control is conducive to inefficient use of resources, for it encourages intensified use of an existing plant and discourages plant expansion and improvement."¹⁸ By reducing the quantity of capital or redesigning equipment, when time for replacement arrives, the marginal cost intersection with demand can be raised to the point where incremental cost pricing would result in a rate equal to or exceeding average cost.

Instead of a rate below average cost, rate *schedules* should be used. These should be designed to yield a high enough average to pay average cost, yet charge for marginal business at low enough rates to carry the volume of production to the point where marginal (social) cost intersects demand.¹⁹

Where it is easy to discriminate among uses or among users, discriminatory rate schedules have been developed by utilities and utility commissions. These are designed to increase the use of utility services by providing lower rates for some

uses. Railroads, for example, sell services which can be classified on the basis of the commodity carried. Street car and bus companies have discriminated among users according to whether they have many or few employees who use their services and whether the employees are easily recognized when fulfilling duties as employees. Uniformed policemen, postmen, and meter readers ride under contract rates in many areas. In this way the rate of production has been increased, carrying it somewhat closer to the point where marginal cost intersects demand.

The objection to such rate schedules is that they treat the transport of some commodities as if they were marginal to the transport of others in the case of railroad rates. In the case of contract rates to specific users, some uses are treated as marginal to others. Actually, it is the "more" of a commodity carried which is marginal to the rest of the same commodity, or the "more" of a service to each customer which is marginal to the rest of the service used by the same customer. There is little recognition of this in many rate schedules.

In terms of the theorems drawn from the weak welfare principle, the objection to discriminatory rates is that they result in marginal rates of substitution which are not equal for all individuals. Discriminatory rates can meet this objection if block rates are chosen in some way that results in a marginal rate to every individual which is the same for all.

There are a few cases of discrimination among users which do not violate—at least, not to the same extent as the cases already discussed—the condition that marginal rates of substitution shall be the same for all consumers. Power companies and gas companies which charge different rates for power or gas supplied for interruptible and non-interruptible

¹⁸ "Limitations of Incremental Cost Patterns of Pricing," *Journal of Land & Public Utility Economics*, Feb. 1943, p. 39.

¹⁹ H. Hotelling, in his "The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates," *Econometrica*, July 1938, seems to be thinking only in terms of a uniform price schedule when he maintains that "the higher cost of the first units produced is of the same character as fixed costs, and is best carried by the public treasury without attempting to assess it against the users of the particular commodity as such." At another point he argues against the existing discriminatory railroad rate schedules, but the argument runs in terms of failure to set low enough marginal rates. Hotelling also argues against *present* discriminatory freight rates schedule because their complexity makes wise choosing difficult.

industrial purposes are supplying two different kinds of services which have different costs. By giving low rates to interruptible users, services whose marginal cost is low are made available at rates which lead to their use instead of causing resources to be allocated to inferior alternatives. The revenues collected from interruptible users make it possible to set rates to non-interruptible users which more closely approximate the ideal.²⁰ Even so, different users are led, to some extent, to different marginal rates of substitution. Interruptible gas service in the summer to an industrial user might be used by a householder for air-conditioning if he were given an interruptible rate for that portion of his use. Interruptible rates should be made available to all or rates should vary with season or hour of the day (as do long distance telephone rates) depending on the nature of a utility's load.

Where rate of use *per customer* can be measured, block rates can be set which provide lower rates for marginal uses. In this case, the marginal use may be more of the same class of use in which the higher priced service is used. This is an advantage of discriminating through block rates as compared to discriminating by user or by use.

The objection to block rates is that the marginal uses of small users cannot be filled along with the marginal uses of large users (this can be modified, in the case of electric utilities, by measuring peak demand with appropriate meters, and using demand charges in addition

to block rates.)²¹ The objection is illustrated by the case of street car transportation where a weekly pass plus a low charge per ride is used. If street car rides are 10 cents each, a weekly pass at 50 cents permitting rides at 5 cents is worthwhile to the person who uses 10 rides worth 10 cents each. He can then use more rides at 5 cents each that are worth 9 to 6 cents to him. For the person who rides twice a week, however, extra rides worth 7 or 8 cents, which can be produced at a sacrifice of only 5 cents worth of alternative product, are not available to him at 5 cents even under the modified rate schedule.

Some utilities have set up customer classifications which effectively separate large and small users. By applying different schedules with low rates starting sooner for small customers,²² marginal rates of substitution are brought into equality for different size customers. Unfortunately, some of the classifications used have been adopted to induce the use of more service by reducing the size of the block charged at the highest rates

²⁰ The argument has been raised that such rates tax one group of consumers for the benefit of another insofar as the rates are different by more than the difference in cost. If the consumers' surplus of one type of user is not great enough to enable the utility to receive an average rate equal to its average cost, but the worth of the service to the consumers is greater than marginal cost of the service, then supplying the latter group makes it possible to supply the former less expensively than if the former did not make its "contribution" to the latter. See W. A. Lewis, *Overhead Costs* (New York: Rinehart, 1949), pp. 44-55.

²¹ Similar objection can be made to a lump sum charge for the privilege of having access to a service at a uniform price equal to marginal cost, unless the lump sum is a single charge made for connecting the service, as in the case of a rural user of telephone or power service, which is equal to the initial investment required to bring service to the consumer in question. If the investment is already sunk whether the consumer in question participates or not, then I see no *perfect* method of meeting the objection. A three part rate has been used for electric service. This provides a charge for energy, a charge for the investment in plant required to meet the customer's peak demand, and a flat charge for the investment and service required for a customer which cannot be used for other customers at the time of non-use by the customer in question and the costs of which do not vary with energy use. The latter charge is designed to cover a return on the investment in the meter and service lines, depreciation and maintenance of these items, and cost of reading of the meter, computing the bill, and billing the customer. The complexity of this method has prevented its use where it is most needed, because of its effect on public relations of utilities. Other schedules, such as Hopkinson rates and Wright rates, have been developed to serve as an equivalent of the three part charge, as nearly as it can be done, and avoid adverse effects on public relations. For a discussion of these, see E. Jones and J. C. Bigham, *Principles of Public Utilities* (New York: Macmillan, 1937), pp. 298-319.

²² Wright rates for electric service are of this type.

only if special uses are undertaken. The space heating and automatic water heating schedules used by some gas companies are of this type. This, however, is proper insofar as the use of more service in the special use at the low rate reduces the average cost of supplying the customer by more than the reduction in average charge that would result if the larger block were charged at the high rate.

The best that can be done (in practice) is to set up rate schedules which (1) are fair (and no more than fair) to investors and which (2) will result in filling as many uses as possible where the value of the use is greater than the marginal cost. To go beyond this would require subsidies and taxes and would fail to provide a market test for the worth of investment programs. The attempt to further improve the allocation of resources by means requiring such action would result in the

taxation of some for the benefit of others who are not necessarily the proper objects of a subsidy.³³

Having discussed the construction of rate structures which will be fair to regulated enterprises while minimizing the waste of resources, we shall examine, in Section II, (which will appear in the May issue) the difficulties that are introduced by the occurrence of technological change. The effect of change on cost structures and on optimum rates of operation will be analyzed and conclusions drawn as to the rate structures which will fit, under circumstances shaped by the presence of technological advance, the criteria developed above.

³³ This is not to argue that projects which have sufficient social value to make them worthwhile, but for which there is no system of pricing which can recover their cost, should not be undertaken. The present contention is only that the weak welfare principle cannot be used to justify them and that some distributive principle which can be made acceptable would have to be applied in devising means of financing the project.

Reports and Comments

A Water Policy for the American People* A Commentary

THE President must have hoped when he established the Water Resources Policy Commission¹ on January 3, 1950 that a statement would result which would aid in resolving our many major water policy issues. The general report, *A Water Policy for the American People*, was released December 17, 1950, 11 months and 14 days after the Commission was formed. The report probably will not be accepted as the water policy of the American people. Nor will it aid materially in resolving the issues.

The effort was tremendous considering the time available and the comprehensiveness attempted. Thousands of individuals, technicians, and government agencies were invited to contribute. Universities and heads of State Departments were included in the invitation. It took nearly five pages of fine type to make the acknowledgments. Eleven subcommittees assembled the data and made recommendations on the several phases of water policy.² The final report shows evidence of a rather hurried combination of several subcommittee statements. It is not easy reading and the analysis too often not solid.

The first 18 pages, headed "A National Water Resources Policy," are a summary of the recommendations. The 19 chapters and five appendices are supporting evidence and

analysis. The inclusiveness of the report is apparent from the chapter titles:

- Chapter 1—Regional Development
2—National Objectives
3—Unity in Planning
4—Evaluation
5—Reimbursement
6—A Resource Investment Program
7—The Need for Basic Information
8—Surface and Ground Water
9—Watershed Management
10—Flood Management
11—Land Reclamation
12—Domestic and Industrial Water Supply
13—Pollution Control
14—Inland and Intracoastal Waterways
15—Hydroelectric Power
16—Recreation
17—Fish and Wildlife
18—Conservation Education
19—Legal Aspects

Three main points of emphasis are apparent throughout the report. (1) Our national economy is expanding rapidly. Hence in the long run we will need all the food and electricity it is physically possible to produce. (2) Water policy and programs should be formulated for regional river basins and should include all aspects of resource use in the basin. (3) The responsibilities of the federal government in planning for and financing water development have been emphasized almost to the exclusion of other units of government.

An Expanding Economy and Valuation

"The broad assumption on which this report is based, which is not explicitly stated in the detailed chapters which follow, is that of an expanding economy." (page 7). The chapter on land reclamation, however, does present evidence supporting the position that the economy will expand rapidly. It has one of the best bits of analysis in the report and deals with the question: Why should we irrigate more land when we have a surplus of food?" (pages 149-174). The analysis follows closely a recent study by the Bureau

* *A Water Policy for the American People*, The Report of The President's Water Resources Policy Commission, 1950, Vol. I, 445 pp., U. S. Government Printing Office, Washington 25, D. C.) Volume 2, *Ten Rivers in America's Future*, and Volume 3, *Water Resources Law*, are supplemental reports to appear soon.

¹ Members of the Commission: Morris L. Cooke, Consulting Engineer, Philadelphia, Chairman; Paul S. Burgess, Dean of Agriculture, University of Arizona; Lewis Webster Jones, President, University of Arkansas; Samuel B. Morris, General Manager and Chief Engineer, Department of Water and Power, Los Angeles; Leland Olds, New York, former chairman, Federal Power Commission; Roland R. Renne, President, Montana State College; and Gilbert F. White, President, Haverford College.

² For complete details of the Commission's procedure see R. R. Renne, "The President's Water Resources Policy Commission," *Land Economics*, August 1950, pp. 295-299.

of Agricultural Economics, U. S. Department of Agriculture, which concluded that current population trends and consumption habits will require additional land and greatly increased agricultural production by 1975.³ Whether it is most economical to get the additional land needed by irrigation or by some other means is not so well covered.

Increased resource needs of an expanding economy led the Commission to pass over rather lightly the question of how large the federal investment in resources should be. For instance, in a rather undisturbed tone the Commission says, "It is impossible, in advance of the planning and programming described above, to state what a resources investment program would cost . . . However, from some studies and estimates by private and public sources, it would appear that an adequate conservation and development program for renewable resources over the next generation might cost the nation in the neighborhood of 100 billion dollars." (page 93). One gets the feeling throughout the report that the total federal investment in resources should be set by physical limits rather than economic.

The Commission makes a number of recommendations which could result in better evaluations between projects. It recommends a uniform system of accounting procedures and project appraisals; a national resources investment budget (pp. 67-96); an impartial review and appraisal board at the national level; and a procedure whereby the several federal agencies would submit to Congress their separate project proposals as a unit. The aim is to get before Congress at the time a project is authorized such facts as the total cost of the project, the amount which will be reimbursed by beneficiaries, and the final federal investment. For several agencies to present their proposals as a unit for an area would require administrative procedures which would result in a better evaluation of projects.

River Basins

The Commission must have felt strongly about planning and programming on a river basin unit. The integration of all the resource uses of an area is, of course, sound. And it has been demonstrated that better project evaluation results if the proposals

must compete with each other at the regional level. As a device to coordinate federal programs the regional approach has real merit. However, nearly every chapter contains a justification for comprehensive planning in river basin regions. The regions seem to be set by the natural resource base rather than by the homogeneous groupings of people. The report did concede a point in New England, the Southeast, and some areas of the Southwest, and say "groups of basins" could be used as the region (page 47). In another place the Commission states such profound logic as this, "A river basin is a natural unit within which climate, rainfall, geology, topography, drainage patterns, stream flows, soils, natural vegetation and types of land and water use are interrelated. The river basin therefore becomes a suitable unit for collection, analysis, and interpretation of its characteristic features." (page 100). Research should be done in river basin regions, according to the report, because "minor projects . . . cannot support such personnel." (page 102). Following this statement 12 research problems in hydrology and sedimentation are listed. Only two of the problems need any reference to a specific area. Economists will be particularly distressed at what the Commission thinks is necessary in water research. After listing four rather important-sounding areas of social and economic research the Commission says, "The Commission is convinced that a program assuring adequate economic and social information along these general lines is of the utmost importance to water resources development. Much of this information is now being gathered and analyzed by the Bureau of the Census and other Government agencies. In fact, many of the deficiencies in data are due to the gaps occurring between censuses. It should therefore be possible to fill these gaps with little additional expense. Then all that will be required will be to relate the compilation of the necessary social and economic information to the process of river basin planning in order that such planning may be directed to meeting clearly defined needs." (page 106). Incidentally, the census has not been reported by river basins.

It seems inconceivable that the Commission could have addressed a letter to most university presidents inviting information for the report and then fail to consider the place

³A Long Range Agricultural Policy, Committee on Agriculture, House of Representatives, 1948.

of universities in developing "basic information" through research.

Enough has been said to convey the idea that the Commission's insistence on the river basin as a region discredits the entire report and does not allow the advantages of regional programs to come into full perspective.

Federal Emphasis

The report deals largely with federal responsibilities for planning water policy and financing programs. This is understandable since it was a national commission and since some of the big problems of the moment relate to lack of coordination between plans and programs of federal agencies. The federal government is also in need of a more realistic method of determining how much federal funds should be invested on what water projects. The report leaves the impression, however, that all phases of resource use must come under the cognizance of federal plans. Equally damaging is the impression that people through their local and state governments do not participate in making federal policy. These impressions are likely to discredit the report and reduce the acceptance of the many important contributions. Individuals—farmers, laborers, businessmen, and consumers—plan for and finance resource use in their private, profit-making activities. They, through their local and state governments, attempt to improve the rules of resource use. In fact, habits, customs and laws dealing with water are primarily state and local. People want their federal government to accomplish some things that otherwise could not be done. A water policy for the American People must represent the objectives of the people and their government at all levels. The report lacks constructive thinking on local, state, and regional relationships in formulating water policy. On the other hand, federal water development programs should be limited to implementing the policy—to those areas where resource use is at variance with the policy and the federal government is the best equipped to carry out the program. But even here the most effective resource-use programs are those jointly designed and carried out by the several units of government.

Specific Issues

Water resource utilization and development involve many debatable issues and the

Commission should be commended for taking a firm stand on a number of moot points. The following selected list of conclusions are illustrations.

On Irrigation. (1) Water users should be charged according to ability to pay (increased value of productivity created by water) rather than the full cost, interest free. (2) Water for no more than 160 acres should be delivered to one user but the unit could contain additional dry land. (3) Cities and villages adjacent to irrigated land should be included in a conservancy district and pay part of the cost.

On Hydroelectric Power. (1) Government should continue to have the right to own transmission lines and steam generating plants. (2) The federal government should take on the utility function and develop electricity in advance of the needs of the region. (3) A federal license should be required for private power development. (4) Municipalities and cooperatives should have preference in purchase of public power.

On Inland and Intracoastal Waterway. (1) The practice of developing waterways for the purpose of reducing rail rates should be discontinued.

On Pollution Control. (1) The federal statute of 1948 should be continued and given a trial. The authority to lend to municipalities for sewage treatment facilities might be increased.

On Domestic and Industrial Water Supply.

(1) Municipal water supply should continue to be primarily a local responsibility. (2) Water furnished a municipality from a multiple-purpose project should be paid for in full. (3) Future water requirements of large water-using industries should be considered as an important regional and national factor in planning river basin programs.

On Surface and Ground Water. (1) Surface and ground water are interrelated and this should be recognized in the planning. (2) Ground water beneficiaries from surface water projects should pay part of the cost.

On Land Management. (1) Related federal activities such as agricultural price supports, soil conservation, irrigation, credit and administration of mining laws should be adjusted to strengthen the effectiveness of watershed management.

On Fish, Wildlife, and Recreation. (1) Project proposals should be thoroughly investigated as to their effect on the nation's

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fish and wildlife resources. (2) Co-operative arrangements should be worked out with states and local governments for recreation areas at government water projects. (3) Congress should authorize a study of the

whole recreation field, having as its objective the development of a national recreation policy.

RAYMOND J. PENN

University of Wisconsin

Housing Characteristics of the United States and Sweden: A Reply

THE article appearing in the supplement to the May 1950 issue of *Land Economics*, "Housing Characteristics of the United States and Sweden," contains one assumption to which I take exception. On p. 28 the following statement appears:

"Because of the stimulation to family incomes through subsidies and the maintenance of low rent controls, a housing shortage continues in Sweden, since the demand for housing at current costs exceeds supply and will probably continue so for several years—as long as subsidies are maintained."

A housing shortage continues in Sweden—true—but not because of subsidies or because of rent control. It is the existence of rent control and subsidies which may in time eliminate the shortage.

However, I think that the trouble lies in Mr. Dickson's definition of shortage as a situation where "the demand for housing at current costs exceeds supply." It is perfectly true that there is presently a greater demand at current costs—i.e., rentals or price of *egnahm* cottages—but this demand is the result of the combined effect of maternity subsidies, old age subsidies, subsidies to low-income families, city planning, aids to cooperatives, the *egnahm* program, etc. Without these aids a very large segment of the population could not generate any effective economic demand for housing. Without price control, the short supply of housing would be able to demand an increase in rents.

But, as we are now realizing here in the United States, if this demand were allowed to govern the total Swedish building rate, too much of the nation's labor and material resources would flow into building. To keep the national budget in hand and see to it that other segments of the economy are kept in line—defense, ship building, agriculture, export industries, etc.—the national government of Sweden has set building quotas for each Swedish town. These quotas are substantial—in 1948 the city of Stockholm was building the same number of dwelling units

as was Detroit, a city three times the size of the Swedish capital.

It has been a basic policy of the Swedish labor Government to keep rentals at 1939 levels (including new construction). This would have resulted in an irreconcilable gap between 1948 building costs and 1939 rent levels, had the Government not instituted "supplementary loans" to cover the difference between the capitalized value of the permitted rent and the actual current building costs. This loan runs interest-free for ten years, at which time it either becomes repayable out of higher rents (if by that time the general rent level has been allowed to rise in line with the permanently higher price level), or is cancellable and written off (if rents at that time are not high enough to enable its amortization). Both state and municipal governments contribute to this "overcost," the state paying 80% and the municipality 20%. All builders are eligible to receive this type of aid.

If the situation is viewed simply through the eyes of a Swedish or American consumer it can be seen that it is false to say that rent control and subsidies have resulted in a shortage of housing. Rather it must be said that through the intelligent use of subsidies and rent control—both essential parts of any responsible housing program these days for the United States as well as Sweden—Sweden is on her way toward meeting the housing shortage.

In these days when inflation threatens us and we still lack a good and comprehensive national housing program it is regrettable to see statements (which are used so glibly against rent control in the United States) in an article which otherwise makes available a great deal of useful data to students of Swedish housing.

DONALD MONSON

Detroit, Michigan

Housing Characteristics of the United States and Sweden: Rejoinders

THE sentence referred to in Mr. Monson's comment was, I believe, jointly phrased by Dr. Dickson and myself.

Mr. Monson agrees that "the demand for housing at current costs exceeds supply" (in Sweden) but does not accept this as indicative of a housing shortage. Let us admit that this is one way in which economists try to fasten some precise meaning to the mystical word "shortage." The word may have many meanings for many different people, although its meaning for Mr. Monson is still a secret.

Mr. Monson states that rent controls and subsidies are essential to "any responsible housing program" and suggest that they "may in time eliminate the shortage."

It must be apparent that the authors recognize the important stimulation to demand arising from the broad program of Swedish housing subsidies (pp. 18, 19, 27, 28) and the part these have had in stimulating a high volume of construction in that country. (p. 28) Mr. Monson objects to our referring to this stimulation of demand as an important factor causing demand to exceed supply. It also seems clear that a substantially larger demand will exist if rents are maintained at 1939 levels, which has an effect similar to that of offering twenty-dollar gold pieces for ten dollars. Would it not follow that a combination of family subsidies and low rents due to rent controls will prolong a market situation in which "demand for housing at current costs exceeds supply," which is exactly what the authors have stated in the sentence to which Mr. Monson objects?

The descriptions of family subsidies and supplementary loans in the second and fourth

paragraphs of Mr. Monson's comment add little to the description on pages 18 and 19 of the monograph.

Mr. Monson and I have a fundamental disagreement on the effects of rent control. (He will find a juicier target for his criticism in an article in *The Appraisal Journal* of January, 1950.)

PAUL F. WENDT

Berkeley, California

MR. Monson does not state what he means by "housing shortage," but possibly he means overcrowding. Actually, one of the objectives of Swedish housing policy has been to reduce overcrowding by stimulating production of larger dwelling units. The use of subsidies and rent control has been a part of that policy: now people can afford to live in larger units. But because of what Professor Wendt and I have called "shortage" many families do not get the opportunity. Mr. Monson says that Sweden is on her way toward meeting the housing shortage. Let us hope that he is right! But if the government does not allow rents to rise, it will certainly take many years until supply meets demand. Five years ago it was believed that the shortage would be eliminated in 1950. However, demand has increased more, and supply has increased less than expected, and the situation is just as difficult today as it was then.

HARALD DICKSON

Stocksund, Sweden

HELEN CORBIN MONCHOW 1898-1950

IN the untimely death of Helen C. Monchow on December 23, 1950, at Washington, D. C., *Land Economics* lost a steadfast worker, a loyal friend and supporter, and a pioneer upbuilder of this journal. As Managing Editor of *Land Economics* under its former name (*The Journal of Land & Public Utility Economics*) from 1931 to 1942 and editorial assistant from 1927 to 1931, she was largely instrumental in shaping its character, establishing its level of quality, and gaining its acceptance as the chief, if not sole, scientific journal in its chosen field. Her imagination, her wide-ranging curiosity, her high scientific standards, her unremitting efforts and devotion to the development of a scientific journal of opinion in this field were its mainstay, the "bricks and mortar," in these formative years. The writer, from a quarter century of association with Miss Monchow in the affairs of the journal and his friendship with her, thought the readers of *Land Economics* would want to know of the dominant part she played in making the journal what it is today.

A brief resumé of Helen Monchow's career will underline these comments. She was born in Cleveland, Ohio, on April 8, 1898, the daughter of Frederick W. and Sarah (Corbin) Monchow. She was graduated from Mt. Holyoke College in 1920 and received her A.M. and Ph.D. degrees from Northwestern University in 1928 and 1937, respectively. After working for several years in Cleveland, in 1926 she accepted appointment as secretary to Professor Richard T. Ely, founder of this journal, at Northwestern University. In the following year she became editorial assistant in the Institute for Economic Research (then the Institute for Research in Land and Public Utilities), directed by Dr. Ely, at Northwestern. In this capacity Miss Monchow's primary responsibilities were to assist in editing the journal, so that it was natural, and more a change in title, for her to become Managing Editor of the journal in 1931. During the next 11 years, a period of uncertainty and real "Sturm und Drang" for the journal, Miss Monchow carried virtually single-handedly the responsibilities of editing the journal and securing the generous assistance of Northwestern University in continued publication.

In 1942 arrangements were completed to transfer the journal back to its original home at the University of Wisconsin, and Miss Monchow resigned as Managing Editor but fortunately remained as a member of the Editorial Board until her death.

During the past decade Miss Monchow practiced with distinction her profession of land economist in Chicago and Washington. Her study of the legal restrictions on zoning, published in 1928 as *The Use of Deed Restrictions in Subdivision Development* was an important contribution to the literature of government policy toward the planning of land utilization. She served as assistant professor of economics at Northwestern University and also as research planner for the City Plan Commission of Chicago in 1941-1942. In the latter year she was called to Washington by Administrator Blandford of the National Housing Agency. Thereafter until her death she worked in various parts of the NHA and its successor, the Housing and Home Finance Agency, in the capacities of editor, housing economist and land economist. Her work included the important task of assembling material for the official history of the war housing program, a project initiated by the Bureau of the Budget. It also included studies of the relations between housing construction and other phases of urban growth, urban redevelopment and planning. For about a year before her death she was a staff member of the Agency's Division of Slum Clearance and Urban Redevelopment. For many years she had been a Trustee of Mt. Holyoke College.

Throughout Helen Monchow's editorial and professional career this writer was greatly impressed by her many fine and unusual qualities. A person of the highest personal integrity, she carried that quality throughout her professional work. She was untiring in her search for truth and for the core of any matter she investigated. Her patience and competence with editorial detail, her industriousness, and her passion for accuracy and perfection in the processes of editing and publishing earned the unbounded admiration of her colleagues. In brief, she was a craftsman of the highest order, both in editorial work and in her chosen profession of research in land economics. As part of

this craftsmanship she had a flair for words and lucid written expression that made her outstanding in her editorial accomplishments. She had a tolerance of the emotional outbursts of her editorial colleagues and a most generous willingness to take over and solve, in her calm and efficient way, the tougher problems of editing. These qualities not only made it a pleasure for others to work with her but also made her a constant refuge in time of trouble, in which her excellent judgment always found wise solutions. And outside the office too she was always friendly,

gracious, and interested in a wide circle of ideas and people.

To me, a colleague of Helen Monchow in the early years of her career and a friend for a quarter of a century, it is sad to record this too early break in the friendship and the loss to her profession and craft of one who made an immeasurable contribution to it in countless quiet and unheralded but significant ways.

E. W. MOREHOUSE

New York City

Book Reviews



Cities in Evolution. By Patrick Geddes. Edited by The Outlook Tower Association, Edinburgh, and The Association for Planning and Regional Reconstruction, London. New York: Oxford University Press, 1950, pp. 241. \$3.75.

Miss Jaqueline Tyrwhitt as general editor, with the help of his son, Arthur Geddes, and of Sir George Pepler, has done a signal service in making available to this generation of urbanists and regional planners the salient chapters of the pioneer work of Patrick Geddes, published in 1915 and long out of print. To the parts of this sheaf of essays that have enduring value (the others were a tract for the times, propaganda in support of housing reform and of the then new British Town Planning Act) Miss Tyrwhitt has added excerpts from others of Geddes' writings and talks that give added flavor of his thinking.

Lewis Mumford, his professed intellectual heir, has aptly described Geddes as one of the great "seminal minds" of his time—and Geddes' time stretched from 1854 to 1932.¹ Geddes' last visit to the United States was in 1923 and those who came under the spell of his personality then have been frustrated in communicating their excitement to others because of the paucity of Geddes' writing. He left no literary testament.

I recall a talent scout for a great mid-western university, hearing of a projected later visit by Geddes to this country, asking whether Geddes should be invited to lecture there; it was hard to suggest what an American university would do with Geddes in 1930. For here was a man who was from first to last a botanist (his main chair was in a provincial Scottish university); who contributed a critique of Marx' economics in a paper before

the Royal Society in Edinburgh in 1884; the founder of a school of sociology; and, of course, a pioneer in town and regional planning. Apart from the essays in the volume now reissued, his writings on planning are dispersed through official reports ranging from Dumferline to Kapurthala.²

In a memorial note at the time of Geddes' death, his old friend S. K. Ratcliffe recalled Geddes' description of himself as "a fellow who pulled the bell and ran away." In another of his own favorite phrases, Geddes might be characterized as the possessor of the synoptic view. But, again, the results of this integrative thinking are not recorded in philosophic statements. They are in his own peculiar form of folded paper diagrams (of which some specimens are given in the present volume); or in sketches like his famous "valley section." This powerful analytic calculus of regional planning has heretofore been hidden away as an illustration in a manual by two of his disciples.³ Miss Tyrwhitt reproduces it in the form in which Geddes presented it in the catalog of his great *Cities and Town Planning Exhibition of 1910*, with a transcript of his exposition of it in a talk at the New School for Social Research in New York in 1923. Here Geddes relates earth forms and growing things to man's modes of work, his social and economic institutions, his ideals, and his gods in a way that has never failed to make students gasp with pleasure, when it has been put before them, for its amazing span and grasp of interrelationships.

Geddes' essays are studded with his own gnarled phrases invented as short-hand for his new thoughts—"conurbation," "paleotechnics," "neotechnics," "Kakotopia," "Eutopia." His formulation of "Place, Work Folk," (based upon LePlay, the Belgian) has aided the thinking of many. I am certain that the reader of today will find

¹ Mumford worked with Geddes in England in 1920-21 in editing the *Sociological Review*. There is a charming sketch of Geddes' personality and thoughts in an autobiographical essay by Mumford, "The Little Testament of Bernard Martin, Aet.," in *The Second American Caravan* (New York: The Macaulay Co., 1928), specially pp. 143-53, where Geddes appears under the name of McMaster. The standard biography of Geddes is Philip Boardman, *Patrick Geddes: Maker of the Future* (Chapel Hill: The University of North Carolina Press, 1944).

² Miss Tyrwhitt performed another work of piety in editing extracts from the series of reports that Geddes submitted to Indian Princes between 1915 and 1919: *Patrick Geddes in India* (London: Lund Humphries, 1947), pp. 101.

³ *An Introduction to Regional Surveying* C. C. Fagg and G. E. Hutchings, (Cambridge: The University Press, 1930), p. 138. It was characteristic of Geddes that he could outline all the elements of a regional survey to be carried out by a battery of specialists.

some of the same excitement in this reissue of Geddes' most systematic essays as many of us found in the original edition and will be tempted to learn more about him from the other sources that I have mentioned.

CHARLES S. ASCHER

Brooklyn College



A Reconstruction of Economics. By Kenneth E. Boulding. New York: John Wiley & Sons, 1950. pp. xiii, 311. \$4.50

During the past few years, Professor Boulding has come to occupy an unique but ambiguous position among American economists. He has remained on the one hand one of the outstanding practitioners of conventional, theoretical techniques in economics. He has become, on the other hand, one of the theorists' leading and most persistent critics. With the present *Reconstruction*, his views are synthesized, his two faces skingrafted into one. The results: Boulding is still a pure, deductive theorist, but his deduction patterns now depart from the conventional. His thought has been "reconstructed" in three principal respects.

1. Boulding's present thinking includes at least a gesture toward the unification of the social sciences. The unifying principle is furnished by ecology, the study of populations in growth, conflict, or co-operation. Boulding's treatment of ecology is formal, quasi-mathematical, and as "pure" as his economics. In economics this new methodology can be applied, Boulding suggests, to a wide variety of problems in dynamics. In this particular book he applies it at one principal point, the theory of capital, to rehabilitate the Austrian concept of a "production period."

2. Boulding introduces a novel approach to the problems of the theory of the firm. In his presentation, the firm is pictured as seeking an "optimum balance-sheet position" rather than maximum profits in any sense. The balance-sheet has become a dog, wagging the income statement tail. This "optimum balance-sheet position" involves notions of liquidity preference as well as profitability. With this approach, production for inventory and sales out of inventory enter the main stream of economic analysis, in which production and sale are now treated

as synonymous and synchronous. Except for a relatively few specialized short-run problems, the net gains may not be worth the cost involved in mastering Boulding's technical innovations, which are sometimes graphically formidable and algebraically involved. Most of the standard conclusions of textbook economics survive the new examination somewhat frayed around the margins, but basically intact.

3. The introduction of liquidity preference into the theory of the firm is a step toward unifying macro- and micro-economics, since liquidity preference has been used only in the former and the theory of the firm has been a stronghold of the latter brand of economics. A second step in this unification, which is another of Boulding's professed major purposes, comes from the theory of distribution. Boulding propounds a macro-economic theory of distribution as Chapter 14 of his *Reconstruction*, which is substantively as well as formally new. It discards both "productivity" and "bargaining" elements in favor of a congeries of aggregates unrelated on their face both to each other and to the distribution of income. These include: household expenditures, business capital accumulation, consumer credit, securities purchases by individuals, shifts of cash between households and business, and business distributions of dividends and interest. These results are derived algebraically from balance sheet identities. The derivations are unexceptionable mathematically, but Boulding seems to interpret the results as casual sequences without justifying one direction of causation rather than another. Many of the phenomena Boulding presents as *causes* or *explanations* of a shift in favor of wages as opposed to profits, for example, can be viewed more plausibly as *effects* of the shift. (Reduced consumer credit and reduced dividend distributions are the simplest cases in point.)

The volume is a succession of exercises in pure economics. There are no empirical verifications, statistical or otherwise, and likewise no predictions regarding the actual world. Boulding had spoken previously of the "slovenly literary borderland" between sociology and economics as the site of significant future developments in economic thought. On the basis of this forecast, the present reviewer had anticipated copious inclusion of institutional material or appreciation of what institutional economists had

done. Instead, however, institutionalism is written off in a footnote as "an attempt to synthesize bad economics, bad sociology, and bad anthropology in a medium of subconscious emotional bias." Whether Boulding's own formal ecology will provide a better basis for progress remains to be seen.

M. BRONFENBRENNER

University of Wisconsin



The Human Use of Human Beings: Cybernetics and Society. By Norbert Wiener. Boston: Houghton Mifflin Company, 1950. pp. 241. \$3.00.

In 1948, Dr. Wiener's *Cybernetics—or Control and Communication in the Animal and the Machine* argued that the same principles governed both the nervous system and the computing machine. *Cybernetics* also heralded a new industrial revolution: "If the seventeenth and early eighteenth centuries are the age of clocks, and the later eighteenth and nineteenth centuries constitute the age of steam-engines, the present time is the age of communication and control."

The age of communication and control is presently characterized, Wiener says, by the vacuum tube, the photo-electric cell, condensers, computing machines and other devices leading to the automatic factory—which he predicts in 10 or 20 years. But he warns that "another great war will, almost inevitably, see the automatic age in full swing within less than five years."

Wiener intended his *Human Use* to be both a simplification of the earlier book and an interpretation of the social significance of cybernetics. But he is not at home in sociology. Wiener dislikes the NAM, Communism and the Jesuits. He hopes it will be possible to "reverse the tide of the moment." But if he knows there is such a thing as social and economic planning, or anything about such seminal contributions to the new economics as those of Elton Mayo and Chester I. Barnard, he keeps it a secret.

Planners and economists, however, should read *Human Use* (and *Cybernetics* too if possible; the latter is a better book) for three reasons:

1. Planners must keep abreast of technological change. Wiener says the "... automatic machine is the precise economic equivalent of slave labor ... It is perfectly

clear that this will produce an unemployment situation in comparison with which the depression of the thirties will seem a pleasant joke."

2. Wiener's point that, "it is the boundary regions of science which offer the richest opportunities to the qualified investigator" will certainly be interesting to readers of *Land Economics*, practically all of whom must have an insight into two or more academic "fields." Wiener opens up investigation of the similarity between communication in man and the machine. He doesn't do so well in relating his fundamental cybernetic concepts to social communications (despite the opportunities here.) Nevertheless he makes a valiant stab in the direction of an all-important fluidity between the branches of learning.

3. The scientists—like Wiener—who have given us atomic energy, radar, automatic machinery will be one of the most powerful groups of the future. Who are they? How do they think? Planners, especially, must know. A good preparation for the human use of scientists is to read Dr. Wiener's books.

STEPHEN B. MILES, JR.

Berkeley, California



Social Pressures in Informal Groups. By Leon Festinger, Stanley Schacter, and Kurt Back. New York: Harper and Bros. pp. 234. \$3.

Charles Ascher sums up a review of administrative practices during the past decade with the conclusion, "Over and over one hears thoughtful administrators, looking back over the decade, reflect on the trend away from mechanistic thinking and practice: the elimination of 'layering'; more reliance on informal contacts and informal coordination; more reliance on management-minded men rather than on a box on a chart marked 'management'; more recognition of the authority of command; more use of the emerging science of social relations."¹ Is land policy like administration, clearly moving in this direction? When a volume is subtitled, as this one is, *A Study of Human Factors in Housing*, are we to take it as landmark or mirage?

¹"Trends of a Decade in Administrative Practices," *Public Administration Review*, Autumn 1950, p. 235.

Land-use theory, at least since Ricardo, has relied heavily upon differences in "the original and indestructible powers of the soil" as a basis for generalization, with tastes and the state of the social and physical arts held constant. Is it too much to hope that there can now develop a parallel theory of land use wherein qualities of land are held constant with variation in the arts of social organization and physical design, and variation in tastes? Are we on the way toward a more comprehensive science which gives adequate emphasis to both sides? A book as stimulating as this one raises such questions.

It is refreshing to see resourceful use of techniques of empirical study applied to the relationships of a group of people in a housing project. We have it on the authority of the sociologists quoted on the dust jacket that the book makes original contributions to sociological methodology: "It is a pioneering study of communication, group structure, value orientation, individual attitudes, and the interrelations of these . . . The description of the elements involved in the spread of planted and spontaneous rumors in the communities add to the work's value and uniqueness," and " . . . there emerge scientific generalizations important to those concerned with group formation, communication, leadership, and related problems."² But the chief importance of the work surely lies in its impact upon land-use thinking.

Clearly, the authors were conscious of their opportunity. The book is organized to allow the second part to develop the significance of the findings for land-use theory, with a chapter by Catherine Bauer and one by Robert W. Kennedy. The other authors may be forgiven for taking the attitude of specialists in titling this second part "practical" applications. Actually, the social psychological findings stimulate architect Kennedy in his chapter to ask a series of questions for research—not to show practical applications of answers already found, and lead Miss Bauer to develop a theory of social research administration, not to lay out a land use program.

¹ The book is the third of a series prepared by the Research Center for Group Dynamics formerly at Massachusetts Institute of Technology and now at the University of Michigan. Previous volumes are Kurt Lewin, *Resolving Social Conflicts* and Ronald Lippitt, *Training in Community Relations*.

Even at this early stage one is tempted to anticipate for these studies in social psychology (along with Robert K. Merton's already well-known but unpublished similar work) an influence on land use policy comparable to Mayo's in industrial organization. Festinger *et al* have made the organization of land for housing appear a problem in arranging for better group relations, as Mayo did in the case of factories.³

As Miss Bauer points out, much progress has been made in planning for more efficient access to staples for everyday household use, to schools, and to transit. But we have had little guidance in planning for more strictly social activity. The study offers the prospect of an approach to neighborhood design with as rounded an approach as has been taken toward the individual house in such recent studies as *Houses for Family Living*.⁴

There remains to fulfill this promise and to meet the challenge of the wider urban environment with an equally broad and informed approach.

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Southern Freight Rates in Transition. By William H. Joubert. Gainesville: University of Florida Press, 1950. pp. xiii, 424. \$6.00

The title of this important study may mislead the scanner of bibliographies; for the word "transition" must be read in the broadest meaning. The author has undertaken a comprehensive survey of the entire history of southern railroad rates with full details on the complex development between 1873 and 1920. After a short but useful chapter on the formative period, 1830 to 1873, nearly two-thirds of the text is given to the history of rate making up to the early twenties.

Emphasis upon the basic patterns for the region as a whole carries us far beyond much of the older literature in which the interests of particular railroads and individual cities were too sharply stressed, and the general structure of the rate system was obscured by the multiplicity of details.

³ Elton Mayo, *The Human Problems of an Industrial Civilization* (New York: The Macmillan Co., 1933).

⁴ Frederick Gutheim and others (Woman's Foundation: 1948).

The judgments of the author are subordinated to the presentation of the critical discussion of the issues. The attitudes of the various groups urging reorganization and reform are stated objectively, so that the exposition reflects the changes in contemporary thought over the whole field. For this reason the text seems to imply that standards for rate making are a free choice of policy to be decided in accordance with some technical formula designed to prevent "discrimination," or to be dominated by some broad social policy aimed at the encouragement of agriculture, or industry, or the establishment of an appropriate balance between agriculture and industry. Among all these recommendations, the author takes a moderate position. He does not accept the view that southern freight rates were framed with the deliberate purpose of retarding the development of the South; but he feels that there is clear evidence that the present rate structure "fails to fit the needs of an economy in transition." This eminently sound judgment would stand out more effectively if there were a little more emphasis upon fundamental geographical factors in the structure of the economy of the South. The South has problems, as all regions have problems, but it is not in any sense a special national problem.

ABBOTT PAYSON USHER

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Cooperative Housing in Europe. A Report of the Banking and Currency Subcommittee Investigating and Studying European Housing Programs, Document No. 148, 81st Congress, 2nd Session, 1950. Washington, D. C. Senate Banking and Currency Committee, Senate Office Building. (free)

This report is the outcome of a trip to Europe during the summer of 1949 of four U. S. Senators: John Sparkman, J. Allen Frear, Jr., Ralph Flanders and John W. Bricker, all of the Housing Subcommittee of the Senate Banking and Currency Committee which had been conducting hearings on cooperative housing. The Report is one of the most comprehensive and up-to-date surveys presently available of housing and planning legislation in the countries visited.

Realizing that the role of the cooperative

could only be understood when discussed in its proper perspective, "in preparing for its investigation the subcommittee agreed that if we were to get a full picture and understanding of the cooperative housing movement in these countries it was not enough merely to study the housing cooperatives; we had to study the cooperative movement in relation to the whole housing program—private and governmental, and to some extent, in terms of its economic, political and historic perspective." Hence the Report gives a comprehensive survey of housing and planning in: Norway, Sweden, Denmark, the Netherlands, France, Switzerland and Great Britain, with particular emphasis on Sweden and the Netherlands as the countries which have had the longest experience with cooperative housing and whose experience has been, to a large extent, the basis for much of the legislation adopted more recently in the other countries. The composition of the delegation precluded any recommendation in the report, which fact gives the document an objective point of view and makes it especially valuable as a source reference for the student of recent European housing and planning. The following aspects of the housing situation in each country are covered: rent control and its relation to postwar building costs, financial aids by each government to all the forms of housing enterprise—private, cooperative and public—subsidies to large families and to low-income families, aid to the aged, the use of non-profit associations as an instrument of public housing policy, prefabrication and research into cost reduction, devices for temporarily increasing the housing supply and the relationship of housing to city planning.

The report does a signal service in placing rent control in its proper relation to the universal postwar rise in building costs and reduces the discussion of rent control to a facet of the total problem. On this point the summary of the report states: "Every country is still continuing its wartime rent controls. As far as we could discover controls were generally accepted, although there was some complaint that not enough flexibility was permitted in the operation of the programs. In most countries the need for increased rents was generally recognized and procedures adopted to subsidize either the landlords or the tenants for the increased cost. . . In almost every country the Government, as

part of its housing policy, has determined to keep rents at what is believed is a 'socially justifiable level'—20 percent of family income. This is higher than the average proportion paid for existing housing in some of the countries today, but such a level of rent in no country is sufficient to meet the costs of new housing."

The section on France is one of the few convincing discussions of the unhappy state of French housing the writer has seen. It appears that not only is rent control applied without reference to other factors which are responsible for the situation, but also "the organization, financing and fiscal machinery connected with the building industry are archaic and seem designed to confuse and hinder anyone so bold as to enter the construction industry."

The maturity of most of the national housing programs impressed the subcommittee, particularly in Sweden where the piecemeal approach of the early years has been replaced by a comprehensive housing policy. The Swedes have found that colonies of old people watching their friends being carried to the cemeteries do not make for the best of neighborhoods; they do not like colonies of low-income families or projects only for "child rich" couples. During recent years neighborhoods have been built to accommodate all kinds of people—families and single persons, large and small families, old and young, the low-income family as well as those more comfortably off; the state pays subsidies to the poorer family, which in turn can live like any other family in a cooperative or publicly-owned apartment. Significantly, only a certain number of families eligible for such subsidies are permitted in a given project.

Rather than follow the dubious practice popular with the United States housing agencies of cutting down the size of dwellings as in the F.H.A. "economy house" or the new public housing space standards, the Europeans have developed several devices for meeting the quantitative housing shortage and yet not sacrificing adequate space standards. Among these devices is the Swedish one of placing an "expansion" room or small apartment between two larger ones so that as the family in the larger apartment grows it can take over the small apartment; the Dutch system of so designing a standard two-floor row house that the two floors can

each serve as separate apartments till the shortage is eased and the house can be used by one family. The Swedish use of prefabricated housing in the "magic house" or "egnahem" program where the family can contribute, under close supervision, its own labor as the down payment on its own house is a remarkable way of combining the economy of mass production with self-help. The report recognizes that housing and city planning are but opposite faces of the same coin and places the housing programs in their city planning settings. "Town and country planning," says the report, "is not like it so frequently is in this country—a zoning and myopic type of planning—but rather a broad, carefully thought-out and a powerful force of community-wide development, and on a nation-wide basis planning in relation to the development of industries and regions. Long amortization periods and low-interest rates—usually at the cost of money to the government—sometimes below and sometimes slightly higher—are the primary financial means by which the various governments have succeeded in reducing the cost of housing in their countries . . . varying interest rates are available for different groups and usually the cooperatives and the municipalities are able to secure the lowest rates."

"The governments have encouraged the cooperative because they believe that it affords an efficient technique of economic construction and maintenance, resulting, therefore, in lower rentals and housing costs to the consumer, and at the same time keeps government out of a field which has been demonstrated is as efficiently or more efficiently run by the cooperative type of organization than by the Government itself. In fact many municipalities employ the cooperative to build and operate the housing projects for them. Furthermore, these governments believe that the people gain an advantage from taking part in such activity in terms of personal satisfaction, and by substituting their own work and efforts for that of others, an economic or monetary advantage. The cooperatives, it is pointed out, are not only interested in housing, as such, but in the social aspects of housing as well, yet unlike the Government they retain the advantage of private initiative. But because they are interested in the social aspects of housing they work closely with the Government but

are nonetheless independent of it. They at the same time serve as the vehicle for special aids by the Government to large families and the aged and carry on a number of special social tasks—such as providing and operating nurseries, kindergartens, recreational activities, etc. The self operation by the cooperatives relieves the Government of a huge administrative task."

This report marks, more than any other Congressional housing document, a coming of age of United States housing in that it indicates that Senators who occupy important places in housing and planning legislation see the need of a comprehensive approach to the problem. Too long has the United States been satisfied with piecemeal housing legislation—a bolstering of mortgages here, an additional appropriation there, a public housing bill, a pre-fab bill, etc. If these men together with their staff, Joseph P. McMurray and A. Lee Parsons, can turn out as comprehensive and objective a job as this, we can look hopefully toward the time when U. S. housing policy will also be in the same spirit.

DONALD MONSON

Detroit, Michigan



Natural Regions of the U.S.S.R. By Lev Semenovich Berg, translation by Olga A. Titelbaum. New York: The Macmillan Company, 1950, xxvi, p. 436, maps, photographs.

This book was first published as *Piroda S.S.S.R. (Natural Regions of the U.S.S.R.)* in Moscow in 1937. It brings together in one compilation summaries of many of the tremendous number of investigations of a great Russian natural scientist. In this book Professor Berg set out simply to describe each of the wide variety of landscapes with which nature endowed the land of the Soviet Union. The book can therefore be almost unique among Soviet publications in the objectivity and completeness of treatment of its topic.

The American Council of Learned Societies Committee which selected this volume for translation could not have chosen another single book which would bring more earth science information from Russia to a great number of American scholars.

The basic organization of the text subdivided the U.S.S.R. into twenty "natural" regions. On the plains of the country seven of these regions were delineated according to their distinctive native wild vegetation. The extent and general characteristics of each zone were considered. Within each zone, Berg then carefully described the characteristics of climate, relief, wild vegetation and wild animals. In the high plateaus and mountains he recognized another thirteen regions based upon their distinctive landform and geological characteristics. Within each of these regions he again described in detail their other natural characteristics.

The book includes a large number of useful photographs, taken from several sources other than the original volume. Twenty-three maps are also included. There is a short bibliography and a glossary which is of great value, for the book is replete with the terminology of botany, zoology, geology, and to a lesser extent meteorology and soil science. A fifty-eight page index concludes the volume and adds further to its usefulness. Throughout the volume there are repeated illustrations of Berg's remarkable grasp of the great array of interrelated physical and biological processes which determine the physical characteristics of Russia's land resources.

To use the book effectively a reader must have two large maps immediately at hand. One is a good reference map—an indexed map with the largest possible number of place names. Another is a good physical map. For the geographic place name is the term Berg uses most often and the one with which the bulk of his American readers will be least familiar. The maps included in the book are too small in scale. They are far less detailed than the text descriptions; thus many places mentioned in the text, and therefore basic to its comprehension, cannot be shown on the maps in the book. This is not remedied by the reference map appended to the text, because the map is small and cannot be referred to readily from other parts of the book.

The book does not treat the lands of the U.S.S.R. from a resource point of view. The data presented in the book were selected on the basis of their interest to the various pure natural sciences and not on the basis of their economic resource significance. There is nothing, for example, on oil resources, the major iron ore or coal deposits or principal

regional differences in water supply or water power potential. Such content was probably excluded from the volume because of Professor Berg's particular definition of the proper scope of a geographical analysis.

Nevertheless, the American reader who uses this volume with effective map aids will be rewarded with a knowledge of the geo-

graphy of the basic land resources of the U.S.S.R. which he could not previously have gained without far more effort.

JOHN R. BORCHERT

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"The Regulation of Motor Carriers in Wisconsin," *Wisconsin Law Review*, January 1951. By Carl A. Auerbach. This article is a brief survey of the statutory development of regulation followed by a detailed but comprehensive study of the control over entry into or expansion of motor carrier operations. A subsequent issue of the *Review* will contain Professor Auerbach's analysis of rate regulation of motor carriers in Wisconsin. (Published at Madison, Wisconsin.)

Marinas—Their Planning and Development. By C. A. Chaney. Washington 6, D. C., Urban Land Institute, Technical Bulletin No. 14, 1950. \$3.00. Marinas, a unique facility on the coastal and inland waters of the United States, are described as a municipal asset to the city and for private clubs and new residential development. This brochure discusses the various aspects of marina and marina location and construction.

Focus American Geographical Society, New York. To be published monthly (except July and August) to provide background facts and geographical interpretations of specific problems and significant events in today's news. Forthcoming issues will deal with petroleum and the Iron Curtain, strategic Iran, and water resources of the United States. \$1 for ten issues.

The Consolidation of Fragmented Holdings. An FAO Study Prepared by Sir Bernard O. Binns and including contributions by K. Skovgaard, The Government of the French Republic, The Government of the Republic of Ireland, and the Federal Government of Switzerland. FAO, Washington, D. C., Agricultural Study No. 11. 1950.

The Railroad Monopoly. By John G. Shott. Washington 3, D. C.: Public Affairs Institute, 1950. pp. 163, appen. \$3.00.

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